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Henry C. Pearson, F. R. G. S., Founder

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Edison's Rubber Process

A Mechanical Process for Obtaining Rubber from Plants in Which the Rubber Content Is Small

CONSIDERABLE interest recently has been aroused by publicity concerning Thomas Edison's protracted search for commercial sources of crude rubber from plants native to the United States. At the time nothing was disclosed about the method employed to secure rubber commercially from the extremely small content available in goldenrod and other plants named in the reports.

The Edison method for rubber extraction as officially disclosed¹ shows it to be a modification of the process regularly employed for the extraction of rubber from guayule shrub. In that process the dried plants are passed through crushing rolls, and the crushed mass is reduced to a very fine pulp in ball mills. The pulp thus produced is transferred to tanks and allowed to settle until the woody material of the pulp becomes water-logged and sinks to the bottom of the tanks. The agglomerated rubber particles present rise to the surface of the water in the tanks, are floated off, separated from the water, and subsequently processed to bring the rubber into merchantable condition. This process is not adapted for extracting rubber from plants where the rubber content is as low as two per cent because the rubber content of the waste material resulting from the process is as much as two per cent of the whole in the case of plants containing ten per cent of rubber.

The Edison extraction process is especially designed for the treatment of plants in which the rubber content is very small, as for example from one per cent down to a half of that proportion or less. The improved process comprises a "debarking and depithing" stage and the "extracting" stage.

A majority of those plants which contain rubber in small quantities have in their make-up a large amount of hard woody material usually containing no appreciable amount of rubber. The latex or rubber is almost entirely contained either in the bark or in the bark and pith.



Goldenrod

The first or debarking and depithing stage of the improved process is conducted as follows: After reaping and drying, the plants are first crushed in rollers to open up the pith and break the bark. The plants are next cut into half-inch pieces and soaked in water to render the bark and pith quite soft. This soaking does not appreciably soften or affect the hard woody material. The soaked mass is next transferred to water-filled ball mills equipped with but a small number of balls. By the action of these mills the bark and pith are practically entirely separated from the hard woody material. The latter constitutes as much as eighty per cent of the entire weight and is useless for rubber extraction.

Treatment for about an hour in the ball mill completely separates the bark and pith from the woody material. The entire contents of the mill are then screened through a suitable mesh

and washed. The woody material is retained on the screen.

The second or extracting stage begins by the reduction of the bark and pith, screened from the woody matter, by grinding in a ball mill to an impalpable pulp. The contents of the ball mill are then transferred to settling tanks where after a suitable period the rubber particles rise to the surface of the water and are floated off. The collected rubber can then be converted to dry merchantable condition by the usual means.

This improved process is practicable from a commercial standpoint to treat plants containing but very small amounts of rubber because of the fact that the valuable rubber containing material of the plants is separated and sufficiently concentrated, as a result of the first stage, as to render practical the results of the extracting stage of the process.

The inventor suggests in his specifications that the first stage of his process can be carried out at the farm where the plants are grown, and the bark and pith pulp dried and pressed into cakes for shipment to a central point, there to be subjected to the extraction stage.

¹ United States Patent No. 1,740,079, Dec. 17, 1929.



Drucker & Baltes Co.

Rubber Manufacturers Dinner

THE Thirtieth Annual Dinner of the Rubber Manufacturers Association, Inc., was held in the Grand Ballroom of the Hotel Commodore, New York, N. Y., on the evening of January 6, 1930. There were six hundred members and guests present.

The entertainment provided for the evening was particularly well selected and comprised a very eloquent address by Hon. Theodore Christianson, Governor of Minnesota, songs by Signor Giovanni Martinelli, tenor, and music by the Commodore Orchestra. F. A. Seiberling, retiring president of the Association, closed the program with a ringing speech on the lack of intelligent foresight and leadership in the rubber industry.

Governor Christianson's Speech

Governor Christianson delivered a scholarly oration on the problems of government and industry in restoring industrial balance. Not so long ago the family was the principal economic unit, and the farm produced every needed commodity. The question of distribution was not raised, and the preservation of industrial balance was easy. But now this has changed, largely owing to the automobile, and we are in the machine age. This age of specialization and division of labor has accentuated the problem of distribution of income, and that equitable apportionment can be accomplished only by establishing an industrial balance. Quotations follow.

"Instead of discontinuing driving automobiles, we need to find the increased income to sustain the more expensive life which the machine has made possible. To do that requires adjustments that will test the ability of the statesmen of America and the foresight and wisdom of its industrial leaders.

"The adjustment between industrial capital and labor is being worked out through collective bargaining between organized groups of workmen and employers. It is being facilitated by the success of the new economist in convincing industry that its welfare depends upon maintaining a market which is sustained by the purchasing power of well-paid labor.

"The adjustment between industry and agriculture is more difficult, for it will be necessary to effect an understanding between two groups, one so conditioned that it cannot bargain effectively. On one side are owners of industry and their organized workmen, whose prosperity is dependent upon getting for industry as large a share of the national income

as possible. On the other side are the farmers, who have found it impossible to speak through one mouthpiece. Still that adjustment must be made. Without it there can be no permanent prosperity for either industry or agriculture.

"Industrial leaders in America today are looking abroad for markets to make up for the loss sustained by reason of the impaired purchasing power of agriculture. They point to the increasing exports of manufactured goods, which in 1929 reached \$3,250,000,000—9 per cent higher than that for the previous year and 18 per cent higher than 1922.

"Those who see in foreign countries continuing opportunity for the expansion of trade have not thought their problem through. It was natural that there should be such expansion during the decade after the War. During that struggle we made great gains in the race for industrial supremacy. Europe has not yet caught up. That she will eventually no man can doubt. A Europe welded into industrial unity will present a formidable challenge and may ultimately force us out of foreign markets.

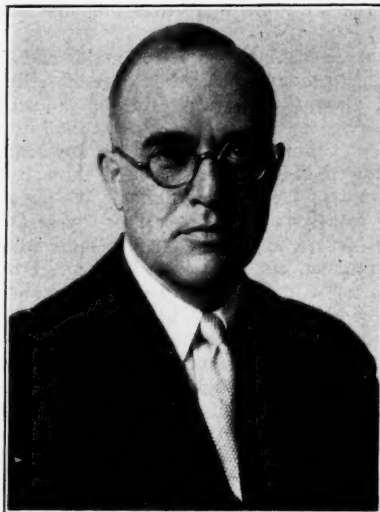
"The unemployment problem is acute in many centers. It is becoming constantly more acute as more rural people move to town. Industrial labor, therefore, has a stake in the restoration of the economic balance. It is doubtful if the policy of paying high wages to support consumptive demand can be continued in the face of fierce competition in the labor market.

"The trend of population cityward has increased productive capacity in the industrial field, which, unless controlled, will result in a glut of goods. The cause of the trend to the cities, with its social and economic consequences, is our failure to preserve the industrial balance.

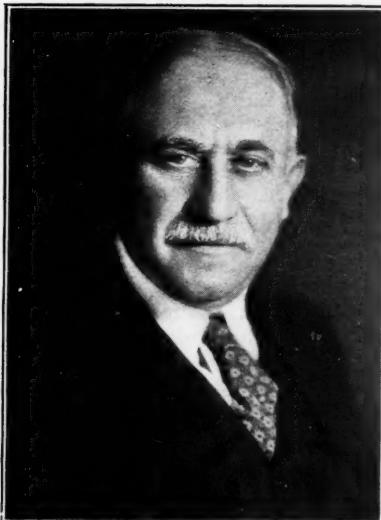
"Heretofore overproduction has been checked by consolidating ownership and closing superfluous plants. How long public opinion will sanction consolidations after it begins to appear that they tend to reduce many workmen and executives to the ranks of the unemployed, is problematical.

"Herbert Hoover senses this. When he asked Congress in its revision of the tariff to leave industrial schedules as they are, except in a limited field, and boost agricultural schedules, he sought to restore that fine equipoise of industry and agriculture which is essential to their prosperity.

"At the outset I promised more questions than I would answer. I believe I have succeeded in keeping that promise. The only answer I have given to the question how the industrial balance can be restored is a fair adjustment of the tariff."



James D. Tew
First Vice President



Blair-Stoner, Inc.

Samuel Woolner, Jr.
President



C. D. Garretson
Second Vice President

President Seiberling's Address

Gentlemen, you may not know it, many of you, but this is the Thirtieth Annual Dinner of the Rubber Association, either the Rubber Club, The Rubber Association of America, or The Rubber Manufacturers Association. They have lived for thirty years, and incidentally, if I may add to the antiquity of the occasion, this is my thirty-third year in the rubber business. I notice Harvey Firestone antedated me by two years, but I started my concern two years before he did.

This is the sort of an occasion when everybody ought to feel good and we ought to go away happy. As I haven't any prepared address, I am going to talk to you intimately just for a minute. Let us lay the black page down first. You heard the Governor's [Governor Christianson of Minnesota] address. He is one of the apostles that wants farm relief, and if you can believe him—and I do—they need it. But in order that the Governor may not go away from here feeling that the farmer is the only one that is entitled to relief, I want to tell him something about the rubber business.

Governor, I am going to quote these figures: Thirty years ago when this Association was organized, we had 301 industries of all kinds in the rubber business, with 36,000 wage earners. The total volume of the business of the United States at that time in rubber was \$99,000,000. Today, of all kinds of rubber manufacturers, not limited to tires, because those fellows have been shrinking in number, we have 450 industries big and small. We have over 150,000 wage earners, and the business in the year 1929 approximates \$1,200,000,000. That is some record. I think it is a record of progress in the industry matched only perhaps by the automobile industry.

Now we are in a time that they call recession. We had something of that sort of experience about nine years ago, when we had a cataclysm of distress world-wide in scope, the most severe business depression in all history. Today we have a recession that affects only our own country. But that the Governor may go back to the Northwest with a picture of one of the industries that isn't feeling very well, I want to tell him something of what has happened the past nine years in the rubber industry.

We have in the past nine years handled in the rubber business a volume approximating \$10,000,000,000. The actual figures are \$9,986,000,000 and some odd dollars. We

have paid in dividends of all kinds during that period less than \$180,000,000. In other words, considerably less than 2 per cent on that turnover.

We have within the past eighteen months put nearly \$200,000,000 of new capital in the rubber business to fill up the gap of losses made before, and some of us apparently are proud of the position of the rubber industry today. We are handling the rubber business today without rhyme or reason. We are in the rubber business today making an actual loss in certain branches of it, and I noticed when my friend Firestone referred to some of the tires being sold to the manufacturers of automobiles at cost, my friend Swayne here, slipped back as though ashamed of himself. He hasn't any reason to be for no one in the automobile industry sought for such values, but the tire manufacturers themselves have been handling that business like the wolves in the jungle. It has been a case of outlaw work, every man for himself, until today, to their shame, they are selling their tires to these manufacturers not at cost but below cost. And I hold that that proceeding is dishonest, for it is dealing with a class on terms, unfair to a larger class, out of whom they must get more money to make up their losses on this side. I say that is to the discredit of the industry and I think the world ought to know it.

I am giving a black picture. We have come through the past year not in a very happy state. We weren't well coordinated, and so the first six months of the year we ran our factories at full speed, perhaps on the stock market wave, I don't know, but we landed in the middle of the year with the largest inventory of tires on hand that we had ever had on a first of July. The past six months we have been absorbing that inventory and we have had the recession. The stock market has helped the static end of it and made people a little gloomy. But the tragedy of it is that we had had to throw men out of employment. There are one-third less workers in the rubber factories in the United States today than were operating last May and June, and we have got to learn in the future how to run our business so that we may keep an even trend, as near as we can, in the employment of labor.

It is not right to employ these men for one season in the year to full capacity and then throw them out on the streets for a period of three to six months hunting for a job. That can only be cured by a coordination and a cooperation among

the leaders of the industry that shall take into account these changed conditions, anticipate them, and then provide for them.

In your minds may be rising the question of the Sherman Act, the Clayton Act, the Valentine Act, and so forth, but the business world and the entire country has learned that those laws have become obsolete. They may have fitted the times forty years ago. They don't fit the times of today and they should be properly modified. We have learned that the dominant interest in all business is the public interest, and the public interest is not served by conditions that give us peaks and valleys, prosperity and distress, in the fashion that we are getting it in the industry today.

The Governor is building roads up in Minnesota so that we may have more automobiles. He wants the farmers to get better prices, which I am for, that they may buy more cars and operate them, but we have got to take care of our industry along the way or they will have no tires and no cars to operate when they get their farmer prosperity.

The rubber industry, as was said down in Washington recently, "is sound, fundamentally." I believe that, but I am telling you it isn't sound in its leadership, and that leadership must come together and coordinate and cooperate for the good of the whole country, for the good of their investors, for the good of their employes, or we will have repetitions of the same situation that we have had the past year.

I think we are coming together. You have got to go through the fire sometimes and get burned a little bit to get real rational in these matters, and we have been passing through a fire the past six months. I think we are at the dawn of a new day. I believe that the year 1930 is going to see this industry put upon a new basis, on a sound foundation, so that we may expect steady progress in the direction of better coordination, better cooperation, all within the law, for the benefit of the public, for the benefit of the investors, and for the benefit of the employes all along the line. That is what I am hoping for.

We are getting a good many panaceas on this recession business. I noticed the Secretary of Commerce, in some statement made a few days ago, could see nothing but hope in the future, except for the automobile industry and the rubber industry. He picked out the two worst ones. Well, these poor automobile fellows are pretty low at the moment. They are not running very strong, and the public seems to have more gloom about the business than they have themselves. They made about 5,600,000 cars in the past year. There is a general feeling that 4,500,000 is the very minimum that they will make next year, and wise heads are putting it as high as 5,000,000. Well, we would like to have them make the rest of those, up to 5,600,000, but I am sure that we can sell more tires on Mr. Swayne's old cars than we can on his new ones. You know, we can on Mr. Ford's because when we see those model T's, those "Lizzies" running along with wobbly wheels, bent rims and everything

else, I know they are wearing out more tires than the new Fords will wear out.

At any rate the tire business, which is the major end of the rubber business, has promise the coming year of selling more of its product, making more profit for the industry, than it had in the year 1929. I am not looking at the future with any gloom. I don't think this is a time for any sentimental optimism or any morbid pessimism, but I think it is time to take a calm view of the whole situation. We passed through our 1920-21 cataclysm within a year or a year and a half. I think it is only a matter of a few months when this recession will straighten out and get in balance. I believe the rubber industry will drag for a few months, but I believe when the spring opens, it is going to start strong. We will have more of a peak demand in the summer than last year.

I am closing my official connection with the Association tonight. I have great hope that through the wise administration of my friend Woolner, we will bring about that happy state of coordination which we are all hoping for. We must look to the success of our competitor as well as our own if we are to keep the entire industry healthy.

Annual Meeting

At the fifteenth annual meeting of The Rubber Manufacturers Association held in the Hotel Commodore, New York, N. Y., on Monday, January 6, the following were reelected to the board of directors for a term of three years: F. B. Davis, Jr., president, United States Rubber Co.; C. D. Garretson, president, Electric Hose & Rubber Co.; J. A. Lambert, vice president, treasurer, and general manager, Acme Rubber Manufacturing Co.; William F. Pfeiffer, president, Miller Rubber Co.; Samuel Woolner, Jr., president, Kelly-Springfield Tire Co.

The following were elected officers for 1930: President: Samuel Woolner, Jr., president, Kelly-Springfield Tire Co.; First Vice President: J. D. Tew, president, The B. F. Goodrich Co.; Second Vice President: C. D. Garretson, president, Electric Hose & Rubber Co.; General Manager: A. L. Viles; Treasurer: W. O. Cutter, vice president, United States Rubber Co.; Assistant Treasurer: H. B. Delapierre, treasurer, Kelly-Springfield Tire Co.; Secretary: A. D. Kunze; Assistant Secretaries: George Flint, R. H. Goebel, C. W. Halligan, Earl Langstroth, and A. C. Grimley.

P. W. Litchfield, president of The Goodyear Tire & Rubber Co., who retired as president of the Association in 1929, and F. A. Seiberling, president of the Seiberling Rubber Co., who retired as president of the Association at this meeting, resigned from the board of directors, and C. C. Slusser, vice president of The Goodyear Tire & Rubber Co., and W. S. Wolfe, vice president of the Seiberling Rubber Co., were elected to fill the unexpired terms of Mr. Litchfield and Mr. Seiberling, respectively. As ex-presidents of the Association, both Mr. Litchfield and Mr. Seiberling remain as ex-officio members of the board of directors.

X-Ray Resisting Rubber

A rubber compound with a high factor of impermeability to X-rays has been perfected by The Goodyear Tire & Rubber Co., Akron, O., especially to replace the cumbersome $\frac{1}{8}$ -inch lead plates used in lining rooms in which Roentgen radiation apparatus is employed. It is called Ray Rubber, is made in $\frac{1}{2}$ -inch sheets, and can be attached with cement, thus eliminating nails which allow ray leakage and even cause fatal X-ray burns. Ceilings of X-ray rooms are insulated by covering the floors above with the new rubber.

Among the first to use the new material and to prove its efficiency were the New York University Hospital, New York, N. Y., and St. Mary's Hospital, Huntington, W. Va.

U. S. Civil Service Examinations

Applications for junior technologists must be filed with the Civil Service Commission, Washington, D. C., by April 8. The optional subjects are ceramics, and paper, petroleum, rubber, or textile technology.

Competitors will be rated on general chemistry, elementary physics, mathematics up to and including calculus, and practical questions on each optional subject chosen.

The entrance salary is \$2,000 a year. Higher-salaried positions are filled through promotion. Information may be obtained from the Commission in Washington, or the secretary of the U. S. Civil Service Board of Examiners at the post office or custom house in any city.

Anti-Friction Bearings

In Light Duty

Rubber Machinery

L. M. KLINEDINST¹

THE application of anti-friction bearings to light duty rubber machinery presents problems that differ in many respects from those encountered in heavy duty equipment. The loads are much lighter and usually free from aggravated peak conditions, but the matter of thrust loads assumes much greater prominence especially in certain classes of machines. Then, too, the speeds as a rule are higher. As a result, the bearing mountings that have been developed for this service are, generally speaking, comparatively simple; with the exception of tube machines and strainers they are designed less with an eye to load carrying capacity and more with a view to the preservation of shaft alignment, and simplified lubrication. The results obtained from the use of anti-friction bearings in such equipment are quite comparable to those obtained with heavy duty equipment, in that the lubrication problem is simplified, power consumption is somewhat reduced, and the general effectiveness of the machine is increased. Of considerable importance is the fact that the expense for upkeep and maintenance is materially reduced. Of course these advantages become apparent in different ways in different machines, as can be seen from a consideration of the various types.

In the case of tube machines and strainers the operation and consequently the bearing requirements are so nearly similar that an outline of the requirements of one will serve equally well for either. From a bearing standpoint the most prominent characteristic is the heavy thrust load caused by the reaction of the stock worm against the material in the cylinder. While it is impractical to measure these loads very accurately, evidence shows that they range from 25,000 to

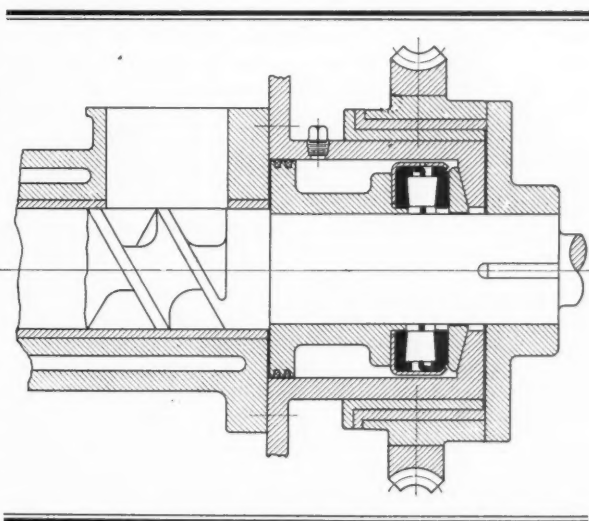


Fig. 2. Bearing Mounting for Tube Machines of Small Capacity.

500,000 pounds, depending naturally on the size of the machine. Ordinarily the thrust load is sustained and constant, but it may vary with certain circumstances, such as the nature of the material being worked or the temperature in the chamber. There is also to be considered a radial load of much less magnitude caused by the driving gear, which is usually mounted on the stock worm shaft. It is desirable in designing mountings for such service to facilitate removal of the stock worm for inspection or cleaning and to provide closures that will effectively prevent the escape of any lubricant.

In spite of the apparent difficulty, a mounting involving the use of anti-friction bearings has been developed which meets all of the requirements. As can be seen from Figure 1, it is simple and compact, for only two bearings are used. As a matter of fact the basic design has been standardized for tube machine or strainer service generally, and only slight modifications are necessary to suit it to the construction of individual makes of machines. The thrust load is carried by a steep angle bearing so located as to transmit the thrust most advantageously without stressing the adjacent parts unduly. The radial load is carried by a smaller standard bearing located at the gear end of the shaft. The former has a thrust capacity considerably in excess of its radial capacity, enough in fact to provide a large factor of safety even under abnormal conditions. In mounting, the bearing cones are

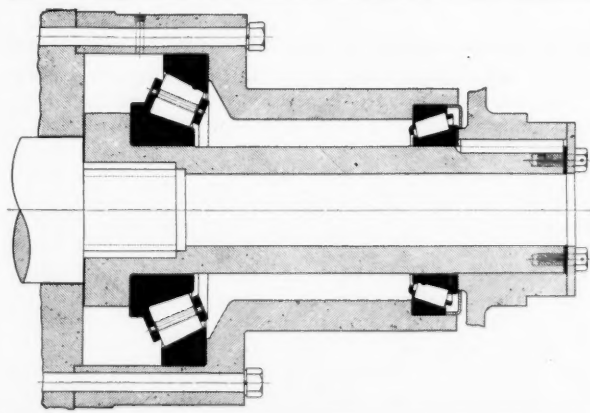


Fig. 1. Typical Bearing Mounting for Thrust Block of Heavy Duty Tubers and Strainers of Corresponding Capacity.

¹ Manager, Industrial Dept., The Timken Roller Bearing Co., Canton, O.

given a press fit on the shaft, and the cups are pressed into the housing. The whole assembly is adjusted from the gear end of the shaft by means of shims between an end plate and the end of the shaft. The plate bears on the gear hub, which in turn bears on the radial bearing. Once the gear is definitely located, the whole assembly is locked in place.

In order to prevent any possibility of lubricant coming in contact with the material in the cylinder, the closure at the screw end of the shaft is made practically solid. That at the other end is much simpler, since the requirements are not so strict. The whole interior of the housing is available as a storage space for reserve lubricant; hence the lubrication problem is considerably simplified.

A variant of this mounting has also been developed for cases where the gear is mounted between the two bearings instead of on the end of the shaft. The same type and arrangement of bearings is used, the thrust bearing being between the gear hub and the screw, and the radial between the hub and the end of the shaft. As in the other mounting, the bearing cones are pressed on the shaft, and the cups into the housings. The whole assembly, bearings and gear, is definitely located by a spacing ring between the gear hub and the outer or radial bearing; the spacer is ground to secure the proper bearing set-up. This arrangement provides a practically homogeneous unit of great strength and rigidity. Lubrication is provided by oil thrown from the gear case. An opening is left between the housing and the hub to permit the entry of the lubricant to the bearing chamber. The same closure arrangement is used as has been described already: that is, an elaborate closure at the screw end of the shaft and a fairly simple one at the other end.

Still another method of mounting has been developed for use particularly on strainers or mold machines of comparatively low capacity. This mounting is shown in Figure 2. In this case a flat tapered thrust bearing is mounted on the screw shaft on a sleeve that fits tight on the shaft hub, and forms the inner bearing closure. The outer closure is formed by the parts that are used to clutch the driving worm wheel. The thrust is transmitted directly to the housing, which is bolted to the chamber.

Rubber hogs or scrap cutters form another class of machine that offers interesting possibilities in bearing application. In this case thrust loads are not such an important factor, but speeds are comparatively higher, with usually a more or less continuous succession of shock loads. It is also of importance that the main shaft be kept rigidly in alignment in order that the material be reduced properly and also to prevent damage to the hammers or other macerating members. Clearance between these and the bed plate is usually small, and only a slight variation in the shaft setting is likely to impair the effectiveness of the machine considerably. Figure 3 shows a method of mounting hog shafts that is fairly typi-

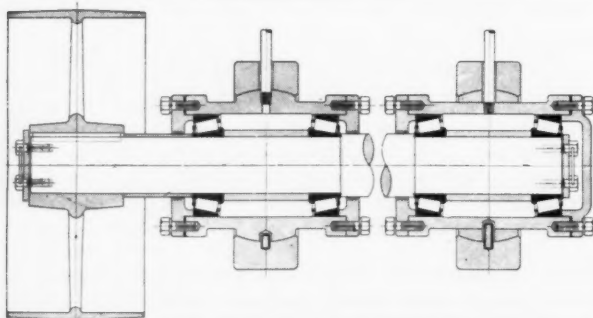


Fig. 3. Mounting Developed for Rubber Hogs, Showing the Provision Made for Self-Alinement of the Shaft and for Shaft Rigidity.

cal for this particular class of equipment. Two bearings per box are used at each end of the shaft; the boxes are independent of each other as far as adjustment is concerned. In each case the bearing cones are given a press fit on the shaft, the inboard ones being pressed against a shoulder on the shaft. A spacing ring is provided to preserve the proper distance between the cones. The cups are given a light fit in the housing, and the whole assembly set up by means of shims between the outboard closure and the housing. In the case of the outboard bearing the assembly is further located by an end plate on the shaft that bears against the outer bearing cone, and on the pulley end the same function is performed by a sleeve between the pulley hub and the outer cone. This arrangement imparts great rigidity to the assembly, a rigidity that will not be affected by the shock loads to which the assembly is subjected.

The closures are as simple as is compatible with the positive retention of the lubricant and the exclusion of dirt or dust, the latter a very important feature in the average rubber mill. The whole interior of the housing serves as a storage space for lubricant; therefore the necessity for frequent renewals is eliminated. It can be seen that both bearing boxes are made self-aligning by spherical seats. This feature is provided to compensate for possible inaccuracies in machining or improper leveling when the machine is installed. As an additional feature one end of the shaft is fixed while the other is allowed to float, to take care of possible shaft expansion. This is accomplished by providing a sliding ring on the self-aligning seat at the outboard end. The net result is that the whole bearing assembly can move with the shaft without disturbing its adjustment.

The many fabrication machines, tire building machines, vulcanizers, etc., have for a long time formed attractive subjects for the application of anti-friction bearings. The reasons why are easily explained: anti-friction bearings preserve original adjustments and alignments indefinitely, they permit quick acceleration to speed, and they reduce the time and trouble involved in maintenance and upkeep. Of

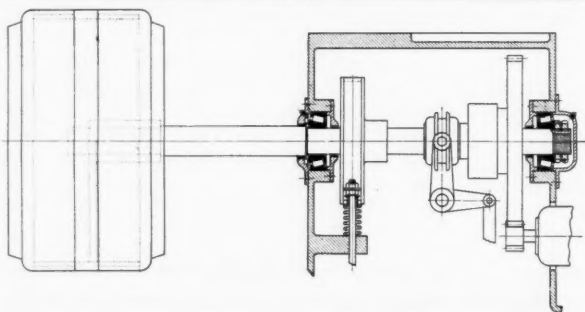


Fig. 4. Mounting Used on Main Shaft of a Drum Tire Building Machine, Designed Especially with a View to Shaft Rigidity and to Carry the Overhanging Load of the Drum.

the many types of machines that have been equipped, the two given as examples have been selected as typical of the machines in their particular class. Figure 4 shows a mounting developed for a drum tire building machine. The loads in this case are fairly light, and the service is intermittent. The principal requirements are that the shaft be held rigidly in alignment, that the overhanging drum be properly supported, and that the drum shall have a rapid rate of acceleration up to speed. In mounting the bearings, the cones and cups are given a light press fit on the shaft and the housing, respectively. The whole assembly is set up from the drive end of the shaft, which is threaded for the reception of the adjusting units. The inner closures are very simple, con-

sisting of plates having annular grooves at their point of contact with the shaft. The whole interior of the bearing housing serves as a storage space for reserve lubricant so that attention in this respect is necessary only at infrequent intervals. One of the principal advantages of this mounting, aside from the better acceleration characteristics it gives, is the rigidity with which the shaft is held in spite of the overhanging load. This feature is of much importance in machines of this sort since it insures smooth rotation of the drum itself.

The mounting shown in Figure 5, which is that developed for the spindle of a nonskid tire mold cutting machine, has several features of interest. In the first place, owing to the character of the service, machining tire molds, the load characteristics are quite complicated, both thrust and radial loads being present. Second, the speeds are high, around 1,800 r.p.m., and the loads are likely to be imposed quite suddenly. Last, there is very little room available for mounting the bearings, in fact it is doubtful if any other type of bearing of sufficient capacity to carry the load could be assembled in the machine. This particular mounting has been designed with a view to both physical simplicity and ease of assembly. The inner cone is pressed on the spindle against a shoulder and the two cups are pressed into the spindle housing to make an integral assembly. The spindle with the inner cone in place is slipped into the housing, and the outer cone put in place. The end closures are screwed into place, and the whole bearing assembly adjusted by means of a sleeve which bears against adjusting nuts on the shaft. The adjustment is locked by a tongued lock-washer which fits in the spindle keyway. Since the whole interior of the housing is available

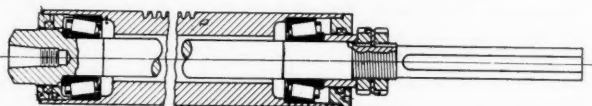


Fig. 5. Compact and Easily Assembled Bearing Mounting for the Spindle of a Nonskid Tire Mold Cutting Machine.

for lubricant storage, adequate lubrication is permanently assured.

Vulcanizers also have been equipped with tapered roller bearings to considerable advantage. The principal points of application are in the door hinges and in the worm gear which serves as a driving unit. Figure 6 shows a typical application to a door hinge. The bearing cones are pressed on the shaft, and the cups given a light press fit in the housings. Adjustment is accomplished by means of shims between the outer closure and the housing. It will be noted that each bearing is individually adjusted, a measure that has been adopted to insure perfect lining up between the door and the case. In this particular instance stuffing-box-type closures are used to prevent the escape of lubricant along the stud, and the outside closures are solid plates. The interior of the housing provides space for an ample reserve supply of lubricant. The principal advantages of this arrangement are: first, it reduces friction in the hinge, making it possible to open the door with very little effort on the part of the motor. Second, since the bearings are not subject to wear at all in service of this sort, the door is held to its original setting throughout the life of the machine, and the requisite close fit of the door with the case is permanently preserved. As to the worm gear bearing mountings, those for both the wheel shaft and worm shaft correspond to the standard mountings that have been developed for this type of gear.

On the whole, experience with these and similar applications of anti-friction bearings has proved that they are well worth while. Because, for one thing, even if the power

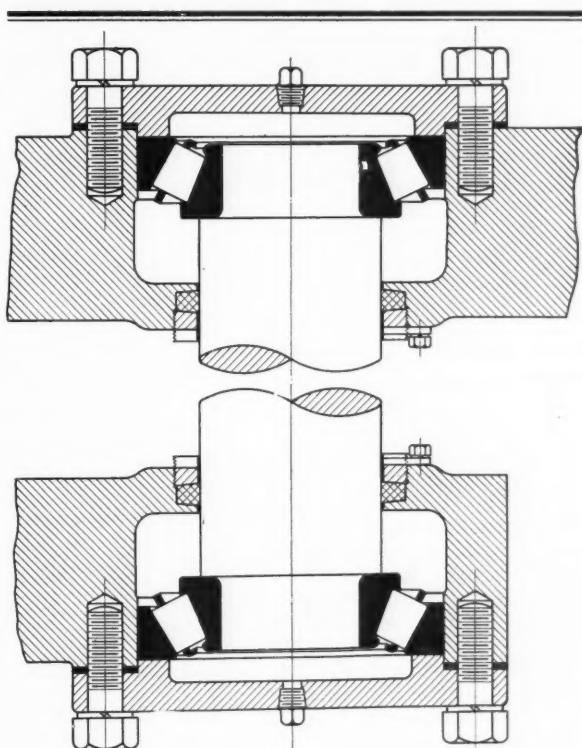


Fig. 6. Bearing Mounting for Vulcanizer Doors. The Method of Adjustment Holds the Doors Permanently to a Close Fit with the Shell.

savings per machine are low, since individual drive is the rule rather than the exception, in the aggregate they may easily amount to a very respectable figure. For another, as has been implied rather than openly stated throughout the foregoing, the use of anti-friction bearings has a very beneficial effect on machine production with respect to both quality and quantity. Where machine adjustments are not subject to variation, the percentage of rejects from internal troubles is bound to be small. In cases where any advantage can be obtained from it, anti-friction bearings permit a considerable increase in machine speed and consequently in the volume of production. At the least, they do insure continuous service from the machines, which amounts to the same thing in the long run. Finally, the savings they effect in lubrication, in maintenance, and in upkeep expense cannot help but appear in the form of lowered production cost, unit, or bulk.

Automobile Production

December production (factory sales) of motor vehicles in the United States, as reported to the Department of Commerce, was 119,950, of which 91,234 were passenger cars, 27,233 trucks, and 1,483 taxicabs, as compared with 217,570 passenger cars, trucks, and taxicabs in November and 234,116 in December, 1928. The total output during 1929 was 5,358,361 vehicles as compared with 4,358,759 in 1928.

A MIXER WAS BATCHING OFF AND, AS HE WAS TAKING off the last piece of rubber and had pulled one half down on the apron, he slipped his hand underneath to pull the rest of the rubber off. The rubber stuck to the roll, and his hand was pulled back in the bite of the rolls. This injury resulted in it being necessary to amputate practically the whole hand. This case was charged with 3,000 days lost. *Rubber Section News Letter*, N. S. C.

Rubber Industry Progress

Reflected in Income Tax Returns

E. G. HOLT

Chief, Rubber Division, U. S. Department of Commerce

THE years 1925, 1926, and 1927 constitute a period of relative prosperity for the rubber industry, in the sense that rubber manufacturers as a whole were better off during those years than in the five preceding years, according to the income tax reports of the U. S. Bureau of Internal Revenue. The income tax reports filed by rubber manufacturers with the U. S. Treasury Department provide much data of general interest to the industry and especially to the accounting and administrative officers.

The slump in world trade which began in 1920 started the industry on a long period of depression. The introduction of cord tires necessitated the purchase of expensive new mold equipment when the depression was at its worst. The greater durability of straight-side cord tires brought about much lower unit sales than would have been the case had the old-style clincher fabric tires remained standard, and this placed the industry in a position of overcapacity. Rubber restriction beginning in 1922 changed the crude rubber market from a stable trade to a speculative gamble which was constantly confounding those who must play the game, and it was only when concerted action was taken by the manufacturers that an uncertain security was attained, which security was perhaps dearly purchased at the end.

The evolution of the balloon tire again brought changes in expensive manufacturing equipment in 1923-1925. The industry during 1926-1927 was roughly two-thirds prosperous and one-third operating unprofitably. Gradual but not satisfactory progress is the net result to be deduced in the income tax reports. As compared with other manufacturing industries for the same two years, the rubber corporations earned total net profits of 3.58 per cent of their gross income against 6.16 per cent for manufacturing in general; hence the industry was far below average in point of earnings. This difference was mainly due to the poor results reported for some few very large rubber corporations, judging from subsequently published trade reports and from the amount of deficit as reported in the income tax reports for a limited number of companies.

Prosperity in the industry during 1925-1927 resulted in payment of income taxes by rubber corporations to the amount of \$29,127,000, as compared to only \$10,785,000 in the preceding three years. The net income of the industry after deduction of deficit but before payment of taxes amounted to \$172,658,000 in 1925-1927 against \$83,282,000 in the previous three years. The average annual gross income in 1925-1927 was \$1,505,636,000 against \$1,047,931,000 in 1922-1924, reflecting a much greater increase in volume of business. The fact that tire prices have been reduced steadily since 1925 makes the actual volume increase

Gross Income, Net Income, and Income Taxes of Rubber Corporations

(Dollar statistics in thousands, 000 omitted)

Year	Number of Corporations	Gross Income	Net Income Before Tax	Income and Profits Taxes
1922	593	\$942,648	\$17,366	\$2,285
1923	607	1,078,894	24,361	2,839
1924	638	1,122,250	41,555	5,661
1925	638	1,469,747	109,024	15,411
1926	680	1,600,779	12,737	4,867
1927	*655	1,447,288	50,897	8,849

* Including 36 inactive corporations.

in units much greater than would appear from the value statistics alone.

The statistics reported for the rubber industry in the income tax reports include statistics for the "bone, celluloid, and ivory manufacturing industries." Unfortunately it is not possible to exclude these extraneous industries from consideration in the various tables. Table 1 shows that the 655 corporations covered by the 1927 statistics included 175

manufacturers of tires and inner tubes of whom 15 were inactive during the year, 354 manufacturers of other rubber products of whom 16 were inactive during the year, and 126 manufacturers of bone, celluloid, and ivory products of whom 5 were inactive during the year. The gross income reported for firms not properly allocated to the rubber industry in 1927 was \$51,429,103, and probably about \$50,000,000 should be deducted each year from the total gross income reported for the rubber industry to allow for the inclusion of these products and to approximate the total for the rubber industry alone.

TABLE 1

Rubber and Allied Corporations by Groups, 1927

(Dollar statistics in thousands, 000 omitted)

	Tires and Inner Tubes	Other Rubber Goods	Total Rubber Goods	Bone and Ivory Products
Total returns	175	354	529	126
Reporting net income ..	64	210	274	61
Gross income	\$828,354	\$168,915	\$997,269	\$42,256
Net income	\$51,398	\$15,930	\$67,328	\$2,925
Net loss prior year ..	\$3,483	\$433	\$3,916	\$183
Income tax	\$6,431	\$2,056	\$8,487	\$362
Reporting deficit	96	128	224	60
Gross income	\$372,652	\$25,447	\$398,099	\$9,173
Deficit	\$15,276	\$3,006	\$18,282	\$1,074
Inactive	15	16	31	5

The gross sales of rubber corporations averaged about \$1,400,000,000 annually for 1925, 1926, and 1927, after making allowance for results of non-rubber firms classified with the industry. It is well known that the trend of prices of finished goods was steadily downward and the volume of business on the increase during this period. Table 2 shows the receipts, deductions, net profit, tax, and dividends paid by rubber and allied corporations according to income tax returns for 1925, 1926, and 1927, compared with the results of all corporations engaged in manufacturing in 1927. The rubber industry gross sales amounted to 2.3 per cent of gross sales for all manufacturing industries in 1927, but net profits were only 1.7 per cent of all manufacturing profits for that year, which was a fairly good year for the rubber industry.

The assets and liabilities shown in Table 3 are stated as an industry balance sheet for companies which submitted individual balance sheets for 1926 and 1927. Similar but incomplete information was also shown in the 1925 report of the U. S. Bureau of Internal Revenue. The number of corporations submitting balance sheets in 1926 was not

TABLE 2

Income Statement with Analysis of Receipts, Deductions, Net Profit, Net Income, Tax, Net Profit After Deducting Tax, and Dividends

	(Dollar statistics in thousands, 000 omitted)			
	Total Manufacturing 1927	Rubber and Related Products		
		1925	1926	1927
Distribution Receipts, taxable				
Gross sales	\$60,931,883	\$1,422,911	\$1,533,528	\$1,413,986
Gross profits from sales	14,446,896	350,759	283,852	348,258
Gross profits on operations not reported under sales	1,112,359		1,400	2,315
Interest	315,554	23,907	5,366	5,415
Miscellaneous receipts	985,991		23,977	16,308
Receipts, non-taxable				
Dividends, stock of domestic corporations	377,092	22,539	36,094	8,774
Interest on federal, state, and municipal bonds	93,410	390	415	491
Total receipts	\$63,816,289	\$1,469,747	\$1,600,779	\$1,447,288
Deductions				
Cost of goods sold	\$46,484,986	\$1,072,152	\$1,249,676	\$1,065,728
Interest paid	677,490	23,253	29,432	28,004
Taxes except income tax	556,865	*	9,163	8,671
Bad debts	242,231	*	*	8,959
Depreciation	1,587,959	27,390	30,096	34,876
Miscellaneous	10,708,661	214,998	233,166	240,889
Total deductions	\$60,258,192	\$1,337,793	\$1,551,533	\$1,387,127
Net profits, total	\$3,558,097	\$131,954	\$49,246	\$60,161
Statutory net income	3,087,595	109,024	12,737	50,897
Deductible net loss prior year	100,147	2,255	831	4,099
Taxable net income	2,987,448	106,770	11,906	46,798
Total income tax	508,411	15,412	4,867	8,849
Total net profits after tax	3,049,686	116,542	44,379	51,312
Dividends distributed				
Cash	2,603,261	33,063	41,343	58,363
Stocks	248,014	1,170	1,174	2,292
Total dividends	\$2,851,275	\$34,234	\$42,516	\$60,655

* With "miscellaneous" deductions. In all tables figures are stated in nearest 1,000; thus they do not often exactly add.

stated, but of the 619 active firms in 1927, balance sheets were secured from 582. A comparison of the annual assets shows a steady improvement in the cash assets, a stable condition of notes receivable, a tendency for accounts receivable to increase, some increase in tax exempt investments, and a huge increase of \$208,000,000 in miscellaneous assets at the end of 1927 against 1926, while a lower inventory position obtained for 1927 than for 1926. Analysis of liabilities shows a decline in notes payable but a large increase in accounts payable, an increase in bonded indebtedness, a decline in preferred stock, and an increase in common stock.

TABLE 3

Assets and Liabilities of Rubber and Allied Corporations

	1925	1926	1927
Assets			
Cash on hand and deposits	\$51,193,230	\$67,401,473	\$77,963,953
Notes receivable	18,221,954	15,557,621	15,375,592
Accounts receivable	216,709,031	204,821,300	267,852,422
Inventories	239,946,928	341,951,350	331,008,550
Tax exempt investments	*	11,554,654	15,274,437
Capital assets	434,705,951	551,483,687	462,025,228
Miscellaneous assets		183,651,690	391,968,231
Total	\$960,777,094	\$1,376,421,755	\$1,561,468,393
Liabilities			
Notes payable	\$110,281,545	\$60,776,140	\$62,361,007
Accounts payable	111,561,057	97,796,151	186,411,774
Bonded debts and mortgages	191,729,677	240,228,309	247,106,918
Miscellaneous liabilities	*	124,802,614	95,060,397
Capital stock preferred	334,567,834	278,889,587	257,618,696
Capital stock, common	250,810,252	386,472,720	457,127,766
Surplus and undivided profits	313,971,225	218,990,405	272,747,943
Deficit	29,906,284	31,534,171	16,966,108
Surplus less deficit	284,064,941	187,456,234	255,781,835
Total	\$1,283,015,306	\$1,376,421,755	\$1,561,468,393

* Not reported for 1925. † Incomplete (see *).

A percentage comparison of receipts and disbursements for the rubber industry with total manufacturing in the United States during 1925, 1926, and 1927 shows that except for 1925 the net profits of rubber corporations were far below the average for all manufacturers. See Table 4. For 1926 and 1927 the cost of goods sold averages 2.55 per cent greater in relation to total receipts for rubber manufacturers than for all manufacturers. This reflects continued keen selling competition between rubber manufacturers, and also probably some greater efficiency in rubber manufacturing methods and operations. Interest paid on bonded indebtedness, borrowed money, etc., averages much higher for

rubber than for other corporations; this has been true ever since 1921. Taxation, other than income tax, averages lower for rubber corporations than for manufacturing in general, probably because of the tendency toward concentration of rubber manufacturing in a rather limited number of large corporations. Losses by bad debts were relatively high for rubber firms. The allowance for depreciation on the part of rubber manufacturers, as a percentage of total receipts, averages less than for manufacturing in general. Miscellaneous deductions have averaged lower for rubber than other corporations; no good reason for this is apparent.

TABLE 4

Rubber Industry Compared with Total Manufacturing 1925-1927

	1925		1926		1927	
	Total Mfg.	Rubber	Total Mfg.	Rubber	Total Mfg.	Rubber
Receipts, total	100.00	100.00	100.00	100.00	100.00	100.00
Gross sales	93.70	96.81	95.66	95.80	95.48	97.70
Gross profits from sales, (per cent of sales)	20.65	23.87	24.74	18.51	23.71	24.63
Profits from other operations	*	*	1.69	.09	1.74	.16
Interest	*	*	.49	.34	.49	.37
Tax exempt income	.67	1.56	.82	2.27	.74	.64
Miscellaneous receipts	5.63	1.63	1.34	1.50	1.55	1.13
Disbursements, total	93.26	91.02	93.25	96.93	94.42	95.84
Cost of goods sold	73.05	72.95	71.98	78.07	72.84	73.64
Interest paid	1.02	1.58	1.05	1.84	1.06	1.93
Taxes, except income	*	*	.89	.57	.87	.60
Bad debts	*	*	*	*	.38	.62
Depreciation	2.24	1.86	2.41	1.88	2.49	2.41
Miscellaneous statutory deductions	16.95	14.63	16.92	14.57	16.78	16.64
Net profits	6.74	8.98	6.75	3.07	5.58	4.16

* Not reported.

The following analysis of items of expense, shown in Table 5, as percentage of gross sales, for rubber manufacturing and allied corporations reporting net income compared with those reporting deficit, for the years 1925, 1926, and 1927 is illuminating. As is generally well known, the smaller companies were more severely affected by the high price of rubber in 1925 than the large companies; in 1926, on the decline in the price of rubber, the large companies were more involved than in 1925, and this was also true in 1927. The "cost of goods sold" represented a higher percentage of the "gross sales" for companies reporting deficit than for companies reporting profit in each year, probably because the selling price is ruled by competition, while the cost depends, to a considerable extent, on the buying acumen of the officers responsible for purchasing rubber.

Corporations reporting deficit paid interest in 1927 on indebtedness amounting to 3.32 per cent of gross sales, while corporations reporting profit paid out for interest only 1.46 per cent of gross sales receipts; losses by bad debts were 0.98 per cent for companies reporting deficit and only 0.50 per cent for the prosperous companies in 1927; taxes other than income tax were 0.91 per cent of gross sales receipts for deficit companies and only 0.50 per cent for prosperous companies, perhaps because the latter were able to keep their factories operating closer to capacity than the former; and depreciation was about the same for the two divisions in 1926 and 1927.

While the total expense items represent a larger percentage

TABLE 5

Analysis of Expense Items as Percentages of Gross Sales, for Rubber Corporations Reporting Net Income and Corporations Reporting Deficit

	Reporting Net Income			Reporting Deficit		
	1925	1926	1927	1925	1926	1927
Gross sales	100.00	100.00	100.00	100.00	100.00	100.00
Profits from sales	25.5	19.3	25.1	12.1	16.7	23.5
Cost of goods sold	74.5	80.7	74.9	87.9	83.3	76.5
Interest paid	1.6	2.0	1.5	2.2	1.7	3.3
Depreciation	1.8	1.9	2.4	3.2	2.2	2.5
Taxes, except income taxes	*	0.6	0.5	*	0.5	0.9
Bad debts	*	*	0.5	*	*	1.0
Miscellaneous expense	14.4	13.7	14.6	25.6	19.0	23.3

* Included under miscellaneous expense.

of sales receipts for the non-prosperous companies in each case, the details are insufficient to disclose the real reason; miscellaneous expenses not enumerated amount to 23.3 per cent of sales receipts in 1927 for deficit companies as compared to 14.6 per cent for prosperous companies during 1927, and 13.7 per cent for such companies in 1926. It would be interesting to know whether inventory losses on rubber are included wholly under "cost of goods sold," or under "miscellaneous expenses," also where cost of mold equipment is allocated.

The cash dividends distributed by rubber corporations increased each year from 1922 to 1927, amounting to the rather impressive totals of forty-one millions in 1926 and fifty-eight millions in 1927. See Table 6. In the last year, however, well over 56 per cent of the total was distributed by corporations which ended the year with a deficit of over nineteen millions. Stock dividends have been extremely limited during the entire period; it has been no melon-slicing time for rubber manufacturers. At the end of 1927, however, the industry appeared solidly entrenched on the road to prosperity, and conditions have been such that even the sudden ending of restriction and losses entailed from the subsequent drop in rubber prices has only retarded and not put a stop to the period of relative prosperity. It seems, now that rubber restriction is a matter for historians and economists rather than of trade dispute, that the future of the rubber industry should be more stable than at any time since the trade slump following the war.

TABLE 6

Dividends Paid Shareholders in Rubber Corporations

(Dollar statistics in thousands, 000 omitted)

	All Rubber Corporations		Corporations Reporting Net Income		Corporations Reporting No Net Income	
	Cash	Stock	Cash	Stock	Cash	Stock
1922	\$11,172	\$8,052	\$8,193	\$8,045	\$2,978	\$6
1923	15,681	2,272	13,969	2,248	1,712	23
1924	16,009	1,227	15,279	1,137	729	90
1925	33,083	1,170	32,697	1,152	365	17
1926	41,342	1,174	33,138	1,157	8,204	17
1927	58,363	2,242	25,444	2,208	32,919	84

The number of companies, shown in Table 7, reporting a deficit in 1923 was 334, almost exactly equal to the number reporting profits for 1927. On the other hand the number reporting a deficit for 1927, 284, is exactly the number reporting a profit in 1922. This symbolizes what has occurred over the period as a whole, a gradual increase in the number of companies reporting profits and a tendency toward decline in the number operating unprofitably except for the year 1926, when the backlash from 1925 rubber prices was probably no more serious than was to be expected. The average gross income of profitably operated companies is very much greater than that of companies reporting deficit, but during 1926 and 1927 a few large companies fell into the latter class and caused a great increase in the percentage of unprofitable operations as compared with 1923-1925, although the total deficit reported did not—quite—increase in proportion.

TABLE 7

Companies Reporting Net Income Compared with Companies Reporting Deficit

(Dollar statistics in thousands, 000 omitted)

Year	Reporting Net Income				Reporting Deficit			
	Number	Total Gross Income	Average Net Income	Deficit	Number	Total Gross Income	Average Net Income	Deficit
1922	284	\$558,984	\$1,968	\$41,929	309	\$383,664	\$1,241	\$24,562
1923	273	908,765	3,328	45,924	334	170,129	509	21,562
1924	325	937,869	2,885	56,960	313	184,380	589	15,344
1925	349	1,373,494	3,935	122,965	289	95,861	331	13,941
1926	339	1,147,455	3,385	37,501	341	452,909	1,328	24,764
1927	335	1,039,525	3,103	70,253	284	407,272	1,434	19,356

A comparison of the returns of companies reporting net income by size of net income over the last three years shows the number of companies earning profits declining from 349

in 1925 to 339 in 1926 and 335 in 1927. See Table 8. No striking change in the number of corporations falling into different income classes is apparent; in 1926 a much smaller number of corporations were in the classes reporting net income above \$50,000 than in the other two years; in 1927, although total net income was less by 52,000,000 than in 1925, the number of companies reporting net income of over \$250,000 was greater than in 1925. Nearly half of the total net income for 1927 was reported by only three firms or 1 per cent of the corporations reporting profits, and eleven corporations (3 per cent) accounted for almost 70 per cent of the profits accruing from rubber manufacturing during that year. About 53 per cent of the prosperous companies had net profits of less than \$10,000 each in both 1925 and 1927, against 57 per cent in 1926.

TABLE 8

Rubber Corporation Returns by Size of Income

Income Classes	1925		1926		1927	
	Number	Net Income	Number	Net Income	Number	Net Income
Under \$2,000	98	\$ 90,880	121	\$ 106,045	102	\$ 92,012
\$2,000-\$5,000	48	134,846	42	135,348	44	136,206
5,000-10,000	38	278,555	31	215,239	31	223,514
10,000-25,000	45	758,272	41	677,146	38	627,314
25,000-50,000	25	884,610	29	1,061,899	28	978,542
50,000-100,000	25	1,801,039	25	1,817,695	28	1,887,420
100,000-250,000	28	4,622,598	19	2,782,819	20	2,962,613
250,000-500,000	17	6,665,583	15	5,865,746	23	7,766,469
500,000-1,000,000	10	7,996,421	11	7,526,787	10	7,051,228
1,000,000-5,000,000	10	20,106,732	4		8	14,320,954
Over 5,000,000	5	80,506,317	1	17,312,253	3	34,206,890
Reporting net income	349	\$122,965,853	339	\$37,500,977	335	\$70,253,152
Reporting no net income	289	\$13,941,445	341	\$24,764,094	†320	\$19,356,486
Total	638	\$139,024,408	680	\$12,736,883	655	\$50,896,666

* Deficit. † Including 36 inactive firms.

The income tax reports show, in Table 9, for the first time, for 1926, the corporations reporting deficit by size of deficit. The total deficit that year for 341 firms was \$24,764,094, and thirteen is the unlucky number of companies reporting deficit in excess of \$500,000, four of these averaging \$1,870,000 each. Only five companies shared the unhappy fate of losing more than \$500,000 each in 1927, but two of them averaged \$3,200,000 each. Large corporations were certainly not free from worry during this period of doubtful prosperity for the industry. The reports also show that during 1927, 36 companies remained inactive throughout the year, and made no statement as to the losses entailed through this inactivity. Severe competition appears gradually to be reducing inefficient firms to a condition of hopelessness, and to be concentrating the business in fewer hands. As shown elsewhere, 15 of the inactive concerns were tire manufacturers and 16 were manufacturing other rubber goods, the remaining 5 being manufacturers of bone, celluloid, and ivory products which are classified with the rubber manufacturers in the reports.

TABLE 9

Corporations Reporting Deficit by Size of Deficit

Size of Deficit	1926		1927	
	Number of Returns	Amount of Deficit	Number of Returns	Amount of Deficit
Under \$25,000	250	\$1,458,766	206	\$1,212,355
\$25,000-\$100,000	44	2,116,263	41	2,050,020
100,000-500,000	34	7,847,045	32	7,545,096
500,000-1,000,000	9	5,860,970	3	2,144,297
Over 1,000,000	4	7,481,050	2	6,404,718
Total	341	\$24,764,094	284	\$19,356,486

While complete information concerning the results of operations by states during 1927 is not published because of the necessity of concealing operations of individual companies, the results are shown in Table 10 by states for all but 1 per cent of the gross income. Ohio, reporting over 51 per cent of gross income and 61.4 per cent of net income for the industry, is followed by New York with 24 per cent of gross income, New Jersey with 6.4 per cent, and Massa-

TABLE 10
Rubber and Allied Corporations Gross Income and Net Income, by Principal States, 1927

States	(Dollar statistics in thousands, 000 omitted)												Inactive Corp.
	All Corporations				Corporations Reporting Net Income				Corporations Reporting Deficit				
	Returns		Gross Income		Num-ber	Gross Income	Net Income	Tax	Num-ber	Gross Income	Deficit		
Total	Active	Total	%										
Ohio	108	107	\$738,473	51.0	70	\$678,864	\$43,256	\$5,520	37	\$59,907	\$2,824	1	
New York	125	119	346,518	24.0	62	104,376	6,684	873	57	242,142	6,832	6	
New Jersey	78	72	92,779	6.4	41	79,751	5,115	617	31	13,028	1,251	6	
Massachusetts	82	79	85,267	5.9	45	44,899	4,689	606	34	40,368	1,616	3	
California	25	24	37,438	2.6	11	34,396	3,422	460	13	3,042	511	1	
Wisconsin	16	14	32,270	2.2	11	16,643	976	125	3	15,627	1,978	2	
Pennsylvania	29	28	30,348	2.1	14	19,082	1,339	78	14	11,266	1,196	1	
Missouri	11	10	15,945	1.1	4	15,007	98	13	6	938	132	1	
Connecticut	19	19	13,415	0.9	12	4,791	431	57	7	8,624	95	0	
Illinois	31	31	11,060	0.8	12	8,455	1,176	125	19	2,605	465	0	
Michigan	13	13	8,394	0.58	6	8,231	427	47	7	163	67	0	
Delaware	4	4	6,736	0.47	4	6,736	1,254	169	0	0	0	0	
Indiana	10	10	4,762	0.33	5	3,241	208	17	5	1,521	358	0	
Rhode Island	8	7	2,942	0.20	4	2,740	306	41	3	202	9	1	
Nebraska	7	7	2,691	0.19	4	1,105	40	5	3	1,586	107	0	
Iowa	10	7	2,040	0.14	3	558	21	2	4	1,482	115	3	
Georgia	6	6	862	0.06	3	744	8	...	3	118	9	0	
Washington	14	11	509	0.04	3	180	3	...	8	329	261	3	
Other states	59	51	14,346	0.99	21	10,023	799	94	30	4,323	1,531	8	
Total	655	619	\$1,446,797	100.00	335	\$1,039,525	\$70,253	\$8,849	284	\$407,272	\$19,356	36	

chusetts with 5.9 per cent. California is now in fifth place with 2.6 per cent of the total.

Ohio and California lead the principal rubber manufacturing states in the matter of profitable operations, only 8.1 per cent of the gross income for the states being reported by non-profitable corporations. On the other hand 69.9 per cent of the gross income for New York was by companies reporting a deficit, 47.6 per cent for Massachusetts, 14.1 per

cent for New Jersey, 48.5 per cent for Wisconsin, and 37.1 per cent for Pennsylvania. Among the states reporting smaller gross incomes, Michigan and Delaware showed excellent results.

The states with the greatest number of active rubber corporations, in order of importance, in 1927, were New York, Ohio, Massachusetts, New Jersey, Illinois, Pennsylvania, California, and Connecticut.

Tire Dealers' Pool

Independents Launch Nation-Wide
Merchandising Plan Based on Mass Buying

JUDGING it the most effective means of combating the growing competition of mail-order concerns, factory-owned outlets, and various types of chain stores, an important group of independent tire dealers has started finally a long-considered merchandising organization having as its main feature pool purchasing. Its operations will cover the entire country and have an estimated buying power of \$50,000,000 based on a membership of 5,000.

United Tire Stores Corp. of America is the title, and the central purchasing agency will be at 11 E. 44th St., New York, N. Y. The 5,000 members will each hold one share of stock of the \$500,000 capital, and each store will retain its separate identity. The organizers say that rapid headway is being made and that the initial enrollment will be filled within six months. Not only tire but also automobile dealers are eligible as members.

Geo. J. Burger, president, and L. N. Southmayd, managing director, are also prominent in the National Tire Dealers' Association, sponsor of the new concern. Practically all sorts of automobile equipment merchandise will be bought on a big scale by the central agency, dealings being only with manufacturers and at prices expected to be on as low a level as obtained by the largest buyers. From the outset the concern will market

tires and tubes bearing only its own brand, and later may sell all other goods only thus marked. Warehouses will be maintained at strategic points.

Goods will be distributed to members at about the regular wholesale level, and the savings made through mass buying will be allotted to members yearly as dividends on the basis of valuation of goods.

A survey by the organizers indicated that 50 per cent of the 72,000,000 tires made in 1928 were for replacement, and of this 32 per cent was sold by mail-order houses, as compared with 12 per cent in 1926. It is estimated that retail tire stores (including factory-owned outlets) sold the remainder. As many more factory stores were opened in 1929, it is held that the latter got a larger and the independents a smaller proportion of the business last year.

Pool buying, it is pointed out, has been quite successful in some other lines, notably in the grocery trade: one organization, starting last May with 40 stores, now has 242, with total sales of about \$12,000,000. This group utilizes a wholesale house as its purchasing agency. Independent druggists, finding themselves hard pressed by the merchandising methods of chain stores, are likewise countering with pool purchasing plans similar to that of grocers.



Design of the New Tire of
the United Tire Stores Corp.

Crude Rubber In 1930

A Study of Potential Production and Absorption

CLIFFORD C. JOHNSTON

1929 Retrospect

At the opening of 1929 the general opinion was that world's consumption of crude rubber would equal or exceed shipments from producing countries. The following were the actual developments: During the first six months of 1929 hidden stocks in Malaya were found to be larger than expected; heavy absorption by United States, United Kingdom, France, Germany, Canada, Australia, and Italy caused rising prices during the first quarter; continuance of heavy shipments during the second quarter from Malaya and Ceylon forced prices lower, but with the exception of Japan a heavy absorption rate was maintained by consuming countries. During the second six months of 1929 heavy shipments from British territories continued, but shipments from Dutch territories below their productive capacity followed declining prices; collapse in stock markets throughout the world during the fourth quarter was reflected in curtailed absorption and rising stocks in consuming countries.

1930 Preliminary Prospect

At the opening of 1930 the general opinion was that the world's potential rate of production exceeds the potential rate of consumption. In the writer's opinion the following developments are likely to occur during the first six months: Curtailment in European rate of absorption due to heavier stocks on hand; gradual improvement in American conditions; favorable bullish factors gradually gaining adherents, that is, prospects of United States 1930 tire production exceeding that of 1929; heavy relative quantity of rubber used per casing, etc. During the second six months: Heavier absorption by consuming countries; increase in production rate of native and other plantations in the Netherlands East Indies; prices working to the level necessary to bring out enough rubber to supply world's needs.

The Malayan Situation

Heavy Malayan production of 1929 was due to:

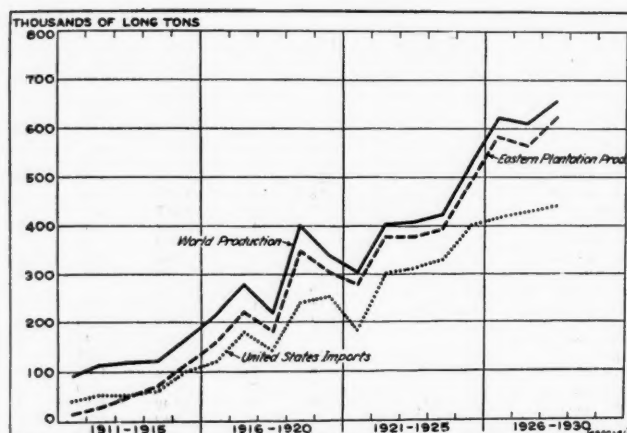
(a) Hidden stocks on estates under 100 acres in the Federated Malay States, on estates over and under 100 acres in Johore, and probably from estates over and under 100 acres in the Unfederated Malay States and in the Straits Settlements. See Table 1.

(b) Stimulated yield of trees due to enforced resting during previous years. See Table 1.

(c) Under-assessment of estates (particularly those less than 25 acres in area) in the administration of the Stevenson Enactment. See Table 2.

(d) Large areas planted nine to sixteen years previous approaching period of maximum yields. See Table 3.

Malayan potential production during 1930 will depend upon the extent to which areas planted prior to 1927 are tapped and upon the intensity of the yield from these trees. The potential production figures for 1930 are based on the average production during the second five months of 1929; no allowance is made for wintering.



Dept. of Commerce, Bureau of Foreign and Domestic Commerce.

Chart Showing Trend of World's Production and U. S. Imports

1930 Potential Production

	Malaya		JOHORE	
	FEDERATED MALAY STATES		Estates over 100 acres	Estates under 100 acres
Tappable Acres*....	827,529	510,570	273,123	203,775
Potential Production..	149,556 Tons	113,712 Tons	45,012 Tons	44,334 Tons
Production Rates.....	405 lbs.	500 lbs.	370 lbs.	490 lbs.

*U. S. Dept. of Commerce.

Straits Settlements and Unfederated Malay States, planted prior to 1927, totaled 660,000 acres.* At a potential capacity of 400 pounds to the acre, they would produce 118,000 tons. Total potential production for 1930 would therefore approach:

	Long Tons
Federated Malay States	263,268
Johore	89,346
Straits Settlements and Unfederated Malay States	118,000

Total

Long Tons
470,000

*U. S. Trade Commissioner Bliss, Singapore.

Ceylon

Potential production in Ceylon during 1930, based on the production during the second five months of 1929, i.e., 404 pounds per acre from 461,000 acres.* Trees planted prior to 1924, (are seldom tappable until the sixth year after planting).....

83,000

*U. S. Dept. of Commerce.

Netherlands East Indies

According to two field investigations, the 1930 potential production of native gardens in the Netherlands East Indies will be:

	Potential Production Tons	Price Necessary For Pot'l. Prod. Shillings
Department of Agriculture N. E. I.†	135,000	1
Rubber Growers Association of London..	138,500	1-6

†Luytjes and Tergast. ‡Tayler and Stephens.

On estates other than native gardens, conservative tapping is the rule and trees are not tapped generally until the sixth year after planting. The production rates during 1928 and 1929 approximated 360 pounds and 380 pounds to the acre respectively. Assuming a production rate during 1930 of 400 pounds to the acre, the potential production of other than native gardens, (936,701 acres planted prior to 1925), would be 167,220 tons.*

*Final Official Report, 1929.

Total potential production N. E. I. for 1930:

	Long Tons
Native gardens	138,500
Estates	167,220

Total

306,000

British India, British Borneo, Sarawak

Production from these countries during the past three years has varied inconsiderably, averaging approximately 30,000 tons annually. This figure is assumed therefore as the 1930 potential production

30,000

French Indo-China and Siam.....

15,000

South and Central America and Africa

30,000

Grand Total

934,000

1930 Potential Absorption—Exclusive of United States

The road mileage in the world outside of the United States, according to a recent survey by the U. S. Department of Commerce, totaled 4,789,348 miles, made up as follows:

	Miles	Per Cent of Total World Mileage
Russia	776,712	9.9
Japan	575,325	7.4
France	405,028	5.2
Canada	381,977	4.9
Australasia	300,000	3.8
India	283,506	3.6
Germany	216,672	2.8
United Kingdom	179,095	2.3
Poland	139,631	1.8
Totals	3,257,946	41.7
Other Countries	1,531,402	19.6

During 1929 the United States total road mileage of 3,016,218 comprised 38.7 per cent of the world's total, a marked decrease from 46 per cent, which was the 1928 ratio. The increasing road mileage outside of the United States is reflected in a larger use of automotive vehicles as is illustrated in the total registration figures since 1921.

	Registration	Increase Per Cent
1921	2,100,000	23.5
1922	2,300,000	10.5
1923	2,800,000	21.7
1924	3,700,000	32.2
1925	4,500,000	21.6
1926	5,500,000	22.2
1927	6,400,000	16.4
1928	7,400,000	15.6
1929	8,300,000	14.9

In the opinion of experts, progress during 1930 toward the settlement of international questions such as reparations and disarmament will very greatly stimulate business and confidence. European rubber factories, in addition to the European branches of American factories, are expected to benefit from the greater availability of capital during 1930. Assuming that the actual consumption of crude rubber outside of the United States totaled 300,000 tons, exclusive of additions to surplus stocks in factory warehouses and elsewhere, the increase of 1929 over 1928 amounted to 19.5 per cent and a similar increase in 1930 would place the total potential absorption at close to 360,000 tons.

1930 Potential Absorption—United States

The 1930 motor car production has been estimated by leading authorities as follows:

	U. S. and Canada
General Motors Co.	5,228,000
Automotive Industries	4,945,000
Standard Statistics Co.	4,941,000
A leading manufacturer	4,780,000

The only estimates as to the carry-over of new and used cars in the hands of retailers as of November 1, 1929, were:

	New Cars	Used Cars	Total
National Automobile Dealers Association	650,000	750,000	1,400,000
to	to	to	to
Standard Statistics Co.	750,000	1,250,000	2,000,000
to	to	to	to
A leading manufacturer	2,000,000	1,250,000	3,250,000

Monthly statistical records indicate that as of January 1, 1930, there were no more than 600,000 new motor vehicles in the hands of dealers. The above estimates indicate that at least 1,000,000 unsold cars were in dealers' hands at the turn of the year. An independent estimate of the 1930 motor car production, made with the idea of potential absorption of crude rubber in mind, follows:

3,800,000 cars required for replacements
885,000 required for export
800,000 required for new and multiple car buyers
5,485,000
600,000 carry-over of new cars January 1
4,885,000 1930 requirements for the United States

Subtracting estimated Canadian production of 260,000 from the above estimates of United States and Canadian production indicates that our independent estimate is a conservative one, being slightly below the estimate of General Motors Co. and somewhat higher than the estimates of *Automotive Industries* and Standard Statistics Co.

Based on the demand for casings and tubes for first equipment in 1928 (See Table 4) and on the 1928 rate of demand for replacements, of casings and tubes (See Table 5) the potential market in United States for casings and tubes would be:

22,000,000 old cars	Number of Casings
1,000,000 old cars in retailers' hands as of January 1, 1930	
23,000,000 old cars at 2.7 casings per car (a considerably higher rate than that of 1929)	62,100,000
4,885,000 new cars at 4.4 casings per car (1928 rate, the 1929 rate being about 4.0)	21,494,000
Export requirements (assuming lower exports in 1930)	2,000,000
Total casings	85,594,000

The preceding estimate of potential production of casings is based on the 1928 rate of 2.7 casings per old car rather than the 1929 preliminary figure of 2.3 per old car because tire manufacturers generally expect a heavy replacement demand in 1930.

23,000,000 old cars at 3.0 per car	Number of Tubes
4,885,000 new cars at 4.4 per car	69,000,000
Export requirements	21,494,000
Total	1,000,000
	91,494,000

Tire manufacturers expect the poundage of crude rubber in the new Ford casings, 19 by 4.75, will exceed that of the tires manufactured for the previous model; according to calculations, the surface area of the old size, 21 by 4.50, exceeded that of the new size. In addition it is generally thought that at prices below 16 cents a pound for crude, there will be an appreciable lowering in the proportionate consumption of reclaimed to crude; in 1929 the proportion was 48.7 per cent. If these assumptions are correct, the poundage of crude will not be less than the preliminary figures for 1929 of 10 pounds per casing and 2 pounds per tube, as compared with 10.4 pounds per casing and 2.0 pounds per tube for the year 1922 (See Table 6). Using these figures, the potential absorption in casings and tubes would be:

85,594,000 casings at 10 pounds	Long Tons
91,494,000 tubes at 2 pounds	382,000
Total	81,700
	463,800

If this tremendous expansion in the tire manufacturing business should take place, other rubber industries would likewise expand, and their consumption of crude would be at least 20 per cent of the tonnage used in casings and tubes.

The 1930 potential absorption for the United States would therefore be: 463,800 tons for casings and tubes, 92,760 tons for other rubber goods, or a total of 556,560 tons of rubber.

Conclusions

The actual production of crude rubber in 1930 will be considerably below the world's potential production. The potential absorption figure may not be attained this year, but with London prices ruling under eight pence the potential is likely to exceed the actual figure by a smaller margin than the potential production exceeds the actual production.

If these conclusions are correct, the potential production, averaged monthly at 78,000 tons, could easily exceed the actual monthly production figures by 8,000 tons, due to:

- In Malaya..... 4,000 tons
- (a) fewer areas less than six years old tapped;
 - (b) elimination of stimulated yields due to resting;
 - (c) reaction from stimulated yields of 1929;
 - (d) cooperative measures taken to reduce outputs.

In Netherlands East Indies..... 3,000 tons

(a) lack of tappers, particularly in native gardens;
(b) cooperative measures taken to reduce outputs.

Elsewhere 1,000 tons

(a) higher costs of production; (b) labor troubles.

The monthly potential production reduced 8,000 tons would bring the annual figure to..... **838,000 tons**

Inasmuch as world's surplus stocks (relatively less at the end of 1929 than they were at the end of 1920 and 1921), are not excessive (based on the 1929 rate of absorption), there should be an increasing demand for rubber at its cost of production, or below the cost of production of the average estate. Nevertheless, the potential absorption, averaged monthly at 76,000 tons, could easily exceed the actual monthly absorption figures by 6,000 tons, due to:

In United States..... 4,000 tons

(a) a replacement demand at the low rate of 1927, reducing potential production of casings and tubes to 76,400,000 and 84,500,000, respectively.

Outside of the United States..... 2,000 tons

(a) 1930 absorption exceeding that of 1929 by less than 10 per cent.

The monthly potential absorption reduced 6,000 tons would bring the annual figure to: absorption by the United States 508,000 tons, elsewhere 336,000 tons, **844,000 long tons.**

Table 1

**FEDERATED
MALAY STATES**

	Estates over 100 acres Tons	Estates under 100 acres Tons
1st 5 mos. 1929	55,871	47,645
2nd 5 mos. 1929	62,314	47,378
2nd 5 mos. Average	12,463	9,476

JOHORE

	Estates over 100 acres Tons	Estates under 100 acres Tons
1st 5 mos. 1929	18,909	24,203
2nd 5 mos. 1929	18,757	18,480
2nd 5 mos. Average	3,751	3,695

Production on larger F. M. S. estates increased 11.5 per cent during the second five months over the first five months. It is reasonable to assume that the remaining estates also would have shown an increase during the second five months had not hidden stocks been shipped during the first five months. It is also reasonable to assume a stimulated yield occurred on all of the estates, particularly during the first five months. Similar figures are not yet available for Unfederated Malay States and Straits Settlements. Production figures from Circular 2554, U. S. Department of Commerce.

Table 2

Estate Quotas Under Malayan Restrictions

Years	Estates Over 25 Acres					Estates Under 25 Acres			
	4-5 yrs.	5-6 yrs.	6-7 yrs.	7-8 yrs.	Maxi- mum	Im- mature	Mature	Maxi- mum	
1922-23	120	180	192	320	400	...	240	...	
1923-24	60	180	240	300	400	160	192	320	
1924-25	60	180	240	300	500	160	320	400	
1925-26	60	180	240	300	...	200	400	400	
1926-27	60	180	240	300	...	200	400	400	
1927-28	180	240	300	...	...	200	400	400	

Table 3

The following table indicates the validity of David M. Figart's claim that the 1921-1922 depression in the planting industry was brought about by the heavy plantings of 1910, 1911, and 1912. They also indicate that heavy plantings, 1913 to 1920, were largely responsible for the heavy production during 1929:

Years	Plantings in Brit. Malaya (In thousands of acres)	Years	Plantings in Brit. Malaya (In thousands of acres)	Years	Plantings in Brit. Malaya (In thousands of acres)
1905	18	1913	132	1921	59
1906	51	1914	94	1922	20
1907	73	1915	122	1923	64
1908	85	1916	140	1924	37
1909	79	1917	228	1925	48
1910	207	1918	128	1926	108
1911	209	1919	175	1927	120
1912	192	1920	120	1928	83
Total	914	Total	1,139	Total	539

The 1923 to 1928 figures are the latest figures of E. G. Holt, Chief, Rubber Division, the U. S. Department of Commerce; whereas the figures for previous years are those of David M. Figart's field investigations.

Table 4

**U. S. Original Equipment Tire and Tube Business
PRODUCED FOR NEW CARS**

Years	New Cars Produced	Per New Car			
		Casings	Tubes	Casings	Tubes
1922	2,590,000	10,180,000	3.9	9,900,000	3.8
1923	4,020,000	16,200,000	4.0	15,660,000	3.9
1924	3,600,000	13,360,000	3.7	12,950,000	3.6
1925	4,266,000	17,600,000	4.1	17,010,000	4.0
1926	4,295,000	17,710,000	4.1	17,890,000	4.2
1927	3,395,000	14,900,000	4.4	15,390,000	4.5
1928	4,358,000	19,160,000	4.4	19,200,000	4.4
1929*	5,300,000	21,200,000	4.0	21,200,000	4.0

* Preliminary.

Table 5

U. S. Tire and Tube Replacements

Year	Old Cars in Use	Produced for Old Cars and Stocks		Per Old Car	
		Casings	Tubes	Casing	Tube
1922	9,900,000	29,600,000	36,900,000	3.0	3.7
1923	11,400,000	27,800,000	40,500,000	2.5	3.6
1924	14,400,000	36,900,000	51,700,000	2.6	3.6
1925	16,200,000	40,600,000	58,900,000	2.5	3.6
1926	18,200,000	41,300,000	55,300,000	2.3	3.0
1927	20,300,000	46,400,000	53,800,000	2.3	2.7
1928	20,800,000	56,800,000	59,100,000	2.7	2.8
1929*	22,000,000	50,000,000	50,000,000	2.3	2.3

* Preliminary.

Table 6

Pounds of Crude in Casings and Tubes

Year	Per Casing		Per Tube
	Casing	Tube	
1922	10.4	10.4	2.0
1923	9.6	9.6	1.8
1924	9.6	9.6	1.9
1925	9.5	9.5	1.9
1926	9.1	9.1	1.7
1927	8.9	8.9	1.6
1928	8.8	8.8	1.7
1929*	9.6	9.6	1.9
1929†	10.0	10.0	2.0

* Three-quarters. † Preliminary.

How Latex Is Coagulated and Rubber Vulcanized

Samples of Rubber Milk and Crude Rubber for School Demonstration

The Educational Department, United States Rubber Co., 1790 Broadway, New York, N. Y., has prepared a set of samples for school teachers to demonstrate various processes in the preparation of rubber. This set includes specimens of smoked ribbed sheet, sprayed, para, and crepe rubbers, each with a brief explanation attached; a tin container of latex; two envelopes, one containing sulphur and the other, tacky rubber between starched holland cloth; and an 8-page leaflet giving complete and simple directions for making the coagulation and vulcanizing tests.

To coagulate the latex, vinegar, in the absence of acetic acid, is recommended. To vulcanize the mixed rubber, which is furnished already broken down and with all necessary chemicals worked in except sulphur, take a strip and place it on the sulphur, covering both sides with the sulphur and smoothing on the latter with your fingers. Place in boiling water and continue the boiling for twenty minutes. For contrast, put another strip without sulphur in another pot of boiling water for the same time. Other enlightening tests also are suggested.

The National Automobile Show

THE Thirtieth Annual National Automobile Show was held under the auspices of the National Automobile Chamber of Commerce in Grand Central Palace, New York, N. Y., January 4 to 11, 1930. The decorative scheme was unusually attractive, the central feature being a grand staircase erected across the central pillared area opposite the main entrance stairway of the building. The color scheme of the decorations served as an attractive background for the comprehensive, colorful and brilliant display of cars. This exhibit surpassed, if that were possible, the showing of cars in previous years. It comprised forty-nine makes of cars, two of which were taxicabs.

The third and fourth floors of the exhibition hall were allotted to the Motor and Accessory Manufacturers Association, which was represented in the exhibits of the products of nearly two hundred manufacturers of automobile accessories. This part of the show was replete with interest to the motorist, comprising, as it did, a host of devices and appliances designed for safety, convenience, and profit in car operation.

The commendable plan, adopted a few years ago, of concentrating machine exhibits of special interest to the trade, was continued. This section was open to the trade only up to 5 P. M. daily to facilitate the convenience of manufacturers and mechanics.

ACHIEVEMENTS OF THE AUTOMOBILE INDUSTRY—1929

PRODUCTION

Cars and trucks produced in U. S. and Canada	5,651,000
Cars	4,846,000
Trucks	805,000
Production of closed cars	4,218,000
Per cent closed cars	87%
Tire production (number) in U. S.	76,260,000
Wholesale value of rubber tires for replacement	\$600,000,000

REGISTRATION

Motor vehicles registered in U. S.	26,400,000
Motor cars	23,030,000
Motor trucks	3,370,000
World registration of motor vehicles	34,700,000
Per cent of world's automobiles in U. S. ...	76%

MATERIALS CONSUMED

Gasoline consumed by motor vehicles, 1929 (gals.)	12,474,000,000
Gasoline used by motor industry	80%
Crude rubber used by motor industry, 1929 (lbs.)	913,920,000
Cotton fabric used in tires, 1929 (lbs.)	287,000,000

The demand of motorists for greater speed and flexibility of performance is being met by the adoption of the 8-cylinder motor, both straight line and V type. Color in harmonious combinations set off with chromium plated trimmings is characteristic of the finish of cars in all price ranges.

Tire equipment is confined entirely to cord balloons of generally accepted form of broad tread. Tires and tubes are now so highly perfected as to construction, riding quality, and ability to deliver service free from trouble, that they have ceased to be a special feature of the show. It should be noted, however, that the tire trend is strongly for larger cross-sections with smaller wheels.

The once-familiar black rubber auto topping has been fully replaced by double-texture proofed goods in various light and

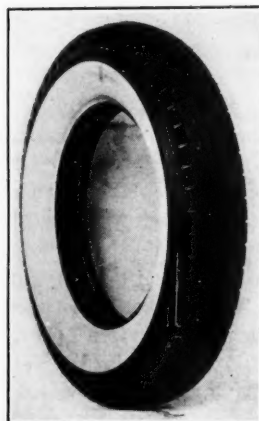
medium tan effects. This material is used generally as topping for sport coupés and phaetons. The latter type is the successor of the touring car of earlier years.

Among accessory exhibits of special rubber interest were those of Raybestos Division of Raybestos-Manhattan, Inc., Bridgeport, Conn., and Passaic, N. J., maker of impregnated and rubber-asbestos brake linings; A. Schrader's Son, Inc., 470 Vanderbilt Ave., Brooklyn, N. Y., manufacturer of tire valves; Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa.; and General Electric Co., Schenectady, N. Y.

U. S. Royal Master White Sidewall Tire

THE color harmony of 1930 passenger cars is enhanced by the luster of chromium plated trim. Tire makers have made their contribution to this artistic combination by adding a line of white sidewall tires. The striking effect of brilliant sidewalls with jet black treads serves as a contrasting wheel trim for every color scheme of car body. White sidewall tires thus supply a demand based wholly on artistic effect.

This is supplemented by quality and design as special features of this type of tires, one of which is here pictured. The straight lines, high buttresses, and sharp shoulders of this tire accentuate the contrast of black and white and give an artistic symmetry to the whole. Such a tire, built of the finest compounds, will last the lifetime of the car.



It should be observed that the new vogue for white sidewalls requires the use of non-discoloring antioxidants, several of which have been perfected. It will also increase the consumption of zinc oxide and lithopone by a considerable degree if the vogue extends to owners of medium and low cost cars. In another season the motorists may ask for tire sidewalls in hues of red, blue, green, tan, etc., to harmonize with the color scheme of the car.

CHEMISTS DESIRING COPIES OF THE "Outline of Tentative Standard Laboratory Procedure for the Preparation and Physical Testing of Rubber" may obtain them, as long as the limited supply lasts, by addressing Dr. A. A. Somerville, Chairman, Physical Testing Committee, 230 Park Ave., New York, N. Y.

EDITORIALS



Industrial Outlook Sunny

THE consensus of analysts' opinions on the business situation for the new year is that while it may start warily, it will quicken its pace in the second quarter, and in the third and following quarter show decided acceleration. Total output in some lines may not exceed that of 1929, but it will be closer to actual needs. Thus, it is stated that far too many automobiles were made last year and hence fewer are likely to be produced in 1930, but supply will be adjusted to real demand.

The recent speculative debacle gave general trade a sympathetic jar, but its effect can only be temporary at the most. In the early spring that panic will probably be like ancient history. Popular confidence in the inherent strength and soundness of American business institutions refuses to be shaken, and faith in the continued prosperity of the country persists despite the bursting of a gambling bubble. The fact that the total volume of general business had been 20.45 per cent higher for the first three quarters of 1929 over a similar period in 1928 might mean little to Wall Street, but to the substantial manufacturing and commercial interests it is very significant. With the troublesome financial vermiform appendix removed, they know that cheap and abundant funds will now be available for a healthy expansion of business.

The rubber industry in 1929 learned many lessons and reaped advantages which should bear good fruit in 1930. It improved on the method of gaging dealers' stocks and consumer demand so as better to avert overproduction; it furthered the wise policies of simplification and standardization; with improved processes and more effective equipment it increased the average unit output per operative; it raised the aging and physical quality of products. Without any abatement of enterprise, the industry has become markedly conservative. Truly the rubber outlook for 1930 can be said to be very encouraging.



When Rubber Became "Metallic"

EVEN though it may be contended that vulcanization is a misnomer, its original use connoting an almost alchemistic transmutation of materials, the chances are that a long time will yet pass before a more exact and serviceable term will take the place it won ninety years ago. The term was first applied in England to the invention by Goodyear in America in 1839 of the hot process of combining rubber and sulphur, and was originated by William John Brockedon, watchmaker, artist, author, and inventor (1787-1854).

As Vulcan was the Roman god of fire, alloying, and the forging arts, and as rubber in the new process was

regarded as being more or less metallized, Brockedon deemed vulcanite a fitting name for at least rubber heated so long with much sulphur that it became tough and solid and could be machined and made to serve many of the purposes of metals. Even Goodyear had called his rubber-sulphur-white-lead product "metallic gum elastic," and his attorney, Daniel Webster, referred to it as "elastic metal."

When Goodyear sought a licensee for his patented process in England, Brockedon, in 1841, gave Stephen Moulton, a young English friend of Goodyear, an introduction to Charles Macintosh & Co., pioneers in rubber proofing. For many years afterward the term "metallic" was applied to footwear and other products by a leading American rubber company.



Rubber Industrial Progress

THE era of empiricism in American rubber industry was sealed more than forty years ago when the aid of the chemist was first invoked for the study of rubber compounding and process development. The introduction of applied science or technology has proved greatly beneficial in perfecting rubber manufacturing processes, compounding, testing, and tire specifications. The studies conducted have improved products and reduced waste of effort and materials.

The ultimate result has been to place the rubber industry on a sound technological basis and enable it to attain its present size and importance. As an instance of what rubber technology has done for the public, reference has to be made only to the riding quality and mileage now obtainable from the modern tire—30,000 or more miles at less cost than 3,000 miles twelve to fifteen years ago. This advancement in quality and service at less cost is basic to transportation by the automobile.

Technologists are evidently to be regarded as key-men of industry. What may be expected from them in the future? In the past stupid boards of directors sealed the fate of otherwise capable rubber companies, because they lacked foresight, initiative, and ability to handle the manufacturing aspects of their job. They failed to utilize the resources of the technician as a salutary factor in management. Now, however, the day of the technician on the board of management is here in industry as a logical sequence of his work in the plant.

This important phase did not begin with nor is it confined to rubber industrial management. Nevertheless what it means to rubber companies, if generally accepted as a policy, is signally apparent already. The rubber industry will no doubt ultimately recognize every factor vital to its progress in the development of automotive transportation.

What the Rubber Chemists Are Doing

Outline of Tentative Standard Laboratory Procedure for the Preparation and Physical Testing of Rubber Samples

Prepared by the Physical Testing Committee, Division of Rubber Chemistry, A.C.S.

THE most important physical properties of rubber compounds which are usually determined in the laboratory are the tensile strength and ultimate elongation or the entire stress-strain relationship. The other physical tests which may be made are so numerous and varied that for the purpose of standardization it is advisable, first, to adopt uniform procedure and conditions for the entire laboratory treatment in the determination of the stress-strain relations.

MILL DATA. The rolls of the laboratory mill shall be 12 inches in width by 6 inches outside diameter, and the working distance between the guides shall be 10½ inches. The speed of the slow roll shall be 24 r.p.m., and the gear ratio should be 1.4 or as near that figure as is compatible with engineering practice. Variation of 2 r.p.m. may cause 3 per cent variation in tensile.

MILL TEMPERATURE. No satisfactory method of controlling the temperature of the batch during mixing has been devised. However, it is recommended that the temperature of the water entering the mills be maintained at 158°F. (70°C.).

It is certain that with sufficient water passing through the rolls and a uniform initial temperature of 158°F. (70°C.) the process of mixing can be made much more uniform. It is recommended that the initial temperature of the rolls be 158°F. (70°C.), which can be attained by the flow of 158°F. (70°C.) water.

MILL OPENING. In order to obtain uniform mixing, it is essential that the relation between volume of batch and mill opening be such that an active bank will obtain. Since it is neither practical nor economical to standardize the size of the batch, it is recommended that the following mill openings be used with batches corresponding to the volumes in the table:

Vol. of Batch CC.	Distance Between Rolls Inches
1,200.....	.170
1,100.....	.160
1,000.....	.145
900.....	.130
800.....	.120
700.....	.110
600.....	.100
500.....	.085
400.....	.070
300.....	.055

BATCH WEIGHT TOLERANCES. Weighing of all ingredients shall be accurate to within 0.25 per cent of the weight specified. The final weight of the mixed batch and the sum of the weights taken of each ingredient shall not differ by an amount exceeding 0.6 per cent with a compound batch

These specifications embody the results of fundamental research on rubber testing financed by The Rubber Manufacturers' Association, Inc. The work was conducted at the Bureau of Standards, Washington, D. C., by a rubber chemist working under the auspices of the Physical Testing Committee of the Rubber Division of the American Chemical Society. It is offered with the suggestion that all rubber laboratories adopt the procedure recommended as standard.

or 0.3 per cent on master batched or gum stocks.

MIXING PROCEDURE. During the period of breaking down the rubber the mill opening shall be .055-inch until the rubber runs smooth on the roll. The opening should then be made to correspond with the volume of the batch in the foregoing table.

The order of adding ingredients to the broken rubber shall be as follows: accelerators and antioxidants, black, fillers, softeners, sulphur.

The ingredients should be incorporated as rapidly as possible. After the ingredients are in the rubber, it is recommended that the rubber be cut six times, alternating first from one side and then the other. This is to be interpreted as cutting two-thirds of the way across the roll and holding until the bank just disappears. After the six cuts are made, it is recommended that the batch should be cut across and rolled six times with the roll being inserted endwise each time until the last when it should be placed lengthwise in the rolls. As soon as the bank is well balanced after this procedure, the rolls should be set to give a sheet approximately .085-inch in thickness after cooling, and the batch cut from the rolls.

STORAGE OF MIXED BATCH. When cut from the rolls, the rubber compound should be laid flat upon a suitable surface (zinc, holland, tinned zinc make no difference in final results) until it reaches room temperature. After cooling it may be stacked with similar batches for several hours for convenience, but for from eighteen to twenty-four hours (either uncut or cut for curing) it should be placed on galvanized wire screens (6-mesh is convenient) to insure air circulation before curing. The storage shall be in subdued light in air having a relative humidity of 45 per cent at 82°F. (27.6°C.). Variations from 0 to 100

per cent relative humidity may cause a difference of 25 per cent in physical properties.

PREPARATION OF RAW STOCK FOR CURING. The uncured stock shall be cut with a die which will give an uncured slab ½-inch less in length and in width than the corresponding dimensions of the mold cavity. The raw slabs shall be placed in the mold with the grain running parallel to the stencil.

MAINTENANCE OF CURING TEMPERATURE. The specified curing temperature shall be interpreted as the inside temperature of the mold as near as it can be determined by means of a thermocouple of a mercury thermometer in a mercury well in the mold. For this can be substituted a steel block with a mercury well as described in *Ind. Eng. Chem.*, Vol. 17, No. 5, page 535, May, 1925, in a previous report of the Physical Testing Committee.

It is recommended that to avoid cool spots in the platens due to condensed moisture, presses of the bored platen type be used. If platens of the chamber type are used, particular attention must be paid that good drainage be insured by placing the steam outlet pipe so that it is slightly below the bottom of the steam chamber.

TIMING OF CURE. When using a platen press, the time of the cure shall start from the time the hydraulic pressure reaches its maximum and conclude at the release of the hydraulic pressure. The slabs shall be removed from the mold immediately after the conclusion of the cure.

MOLD DIMENSIONS. The depth of the cavity for the rubber slab shall be .075-inch. The thickness of the steel mold under the cavity and the thickness of the cover plate shall be .500-inch. The mold shall be of such dimensions that the slab while curing shall not be nearer than 3 inches from the edge of the platen. A drawing for a recommended mold is shown in the accompanying illustration.

TEMPERATURE OF MOLDS. The mold shall be brought to temperature before inserting the uncured stock by being placed in the closed press for a period of not less than twenty minutes.

SHIELDING OF MOLDS. During the curing the molds shall be protected from draughts by the use of wooden elfs or shields of some sort. Protection often causes a rise of 1°C. in temperature of mold.

CLEANLINESS OF MOLDS. No preparation of any sort shall be used on the molds to prevent sticking. The molds shall be kept clean, and it is recommended that they be

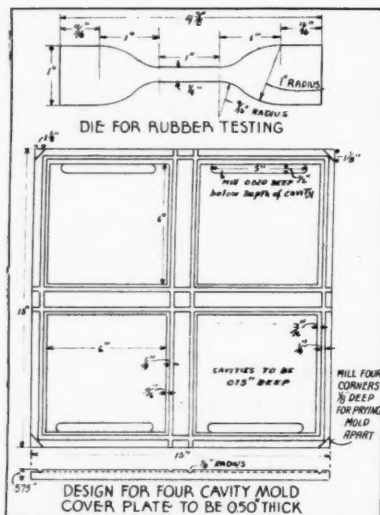
cleaned as soon as there is a tendency of the cured stock to stick. It is suggested that the molds may be cleaned, using any one of the following: (a) ground emery and water, (b) buffer cloth, (c) whiting paste.

COOLING OF CURED SLABS. When the slabs are removed from the molds, they shall immediately be placed in water to cool for a minimum time of ten minutes. This water, if kept in a retainer, should be changed frequently to prevent contamination. When removed from the water, the slabs shall be wiped dry and placed upon a liner or wire screen for storage in subdued light.

DIEING OF SPECIMENS. When the specimens are cut, it is recommended that the die or the stock be wet with water. Any residual water shall be wiped from the test pieces before conditioning for testing.

STANDARD DIE. The die used shall be the one illustrated in the accompanying illustration. The width of the constricted portion of the die shall be 0.250 \pm .005-inch, and great care shall be taken, when the die is resharpened, that these dimensions are maintained. It is essential that the cutting edge of the die be kept sufficiently sharp and free from imperfections so that the died specimen may have a smooth cut surface with a minimum of concavity.

CONDITIONING FOR TESTING. The test



specimens shall be conditioned for 24 hours in air with a relative humidity of 45 per cent at 82°F. (27.6°C.) before testing at the same temperature.

MEASUREMENT OF TEST. In measuring the thickness of a test specimen, the diameter of the presser foot shall be 0.25-inch, and it shall be actuated by a dead weight

of 3 ounces. The average thickness of the specimens in the constricted portion shall be used in the determination of the stress-strain relation and the tensile at break. The width of the test specimens shall be considered as the width of the die.

BENCH MARKS. Bench marks, 1 inch apart, shall be placed near the center of the constricted portion with an instrument as illustrated, and used for determining the per cent elongation.

TEMPERATURE OF TESTING. The testing shall be done at a temperature of 82°F. (27.6°C.), and this should be controlled within plus or minus 2 degrees. A variation of 1°C. may cause a 1 per cent difference in tensile or modulus.

SPEED OF TESTING. The testing shall be done with a machine which stretches the specimen at a speed closely comparable to that attained by using a Scott tester whose lower grip travels at the rate of 20 inches per minute. Slight errors may be caused by varying this speed.

EVALUATION OF RESULTS. Breaks which occur outside of the straightaway portion of the specimen shall be discarded. In recording the final tensile of a compound obtained by three or more individual tests, it is recommended that the highest figure, and those that come within 5 per cent of this value be averaged, discarding those results which vary more than 5 per cent from the highest tensile figure.

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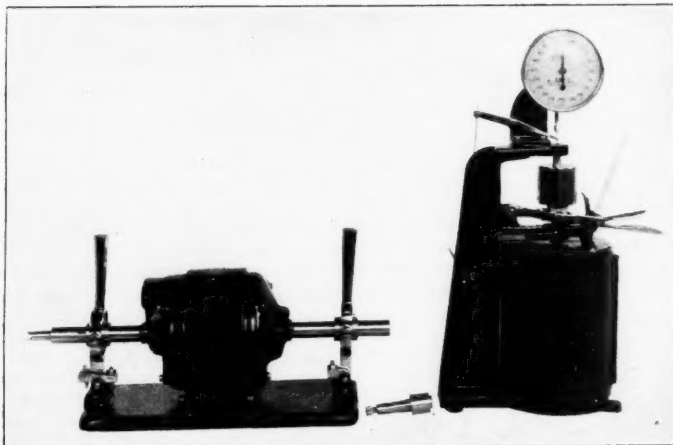
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New Machines and Appliances



Goodrich Plastometer and Test-Piece Cutter

Goodrich Simplified Plastometer

THIS instrument developed in the research laboratories of The B. F. Goodrich Co. for the measurement of the plasticities of rubber compounds is simple and rapid in operation and gives results which are easily translated into factory practice. Although developed for the measurement of rubber, it is adaptable by simple modification of the load, to the measurement of other plastic materials such as ceramics, felt, synthetic resins, etc.

The plastometer consists of a mechanism for applying a load to compress a standard test piece mounted upon an anvil. A gage attached to the loading plate on top of the sample follows the change in height of the test piece during compression and during recovery after the load has been removed. The plasticity values are obtained from a simple arithmetical calculation. The complete test cycle for rubber compounds is only one minute, as contrasted with thirty minutes or more for other plastometers.

The illustration pictures the plastometer at the right and the test piece electric cutter at the left. Samples are cut from the rubber to be tested by pressing the cutting tool extending from the left of the motor against the slab of stock, using the lever provided for that purpose. The plug thus obtained is inserted in the tubular extension at the opposite end of the sampling apparatus, which serves as a chuck for facing the sample and cutting a short test cylinder the diameter and length of which is 0.444-inch. A pair of forceps are provided for handling this sample into and out of the furnace portion of the plastometer.

The instrument is useful in the rubber industry for control of crude and compounded rubber, for the study of the plastic properties of vulcanized rubber, for the determination of scorching rates of unvulcanized compounds, etc. The operation of the plastometer is described in *INDIA RUBBER WORLD*, September, 1929, page 72. The Black Rock Mfg. Co., Bridgeport, Conn.

Calender for Rubberizing Weftless Cord Fabric

THE calender employed for coating and forming a sheet rubber coated on both sides in one passage through the machine is pictured in the accompanying illustration.

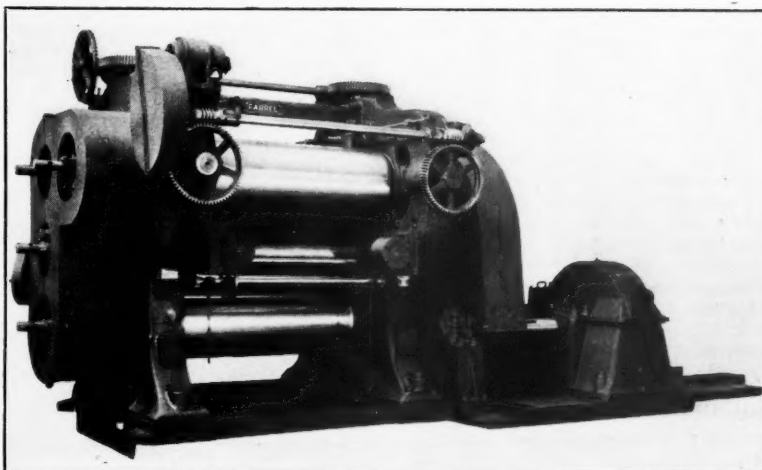
It comprises four chilled rolls, three being arranged in a vertical stack and the fourth on the side opposite the top of the vertical rolls. The top and bottom rolls in the vertical stack are adjusted by one motor in exactly the same manner as the regular three-roll calender. The side roll is adjusted by a separate motor. A sheet of rubber is formed between the top and side rolls and another sheet between the bottom and middle rolls.

The cords come to the calender from a final comb which keeps them separated and alined. They are then passed over the cord spacer bar which extends across the calender in front of the second roll, its left end being located at about the top of the hand-wheel adjacent to the left-hand housing.

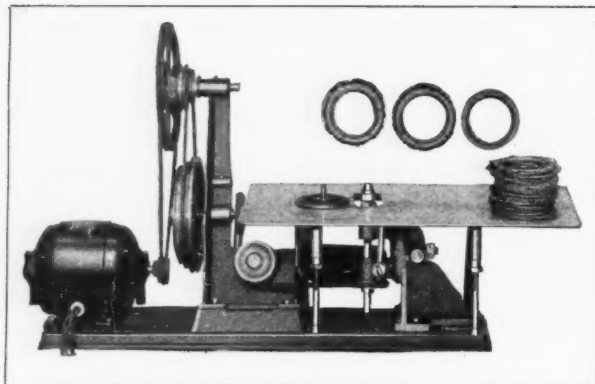
The spacer bar is of steel, about two inches square, each corner being cut with half-round grooves of different sizes to accommodate four gages of cords, and is mounted so that it can be turned to present the proper grooving for the size of cord being run. Its function is to separate and hold in accurate alinement the different cords immediately prior to their passing into the first sheet of gum.

The cords are then led under the pressure roll located immediately above the spacer bar. The cords are thus lightly embedded in the rubber sheet which comes up on the middle roll. With this sheet the cords pass on between the middle and top rolls at which point the sheet formed between the top and side rolls joins and makes a complete covering for the cords.

After the pressure roll has been set into operating position by the hand-wheel, a little additional pressure is often required and for this purpose the two ratchet handles shown at either end of the cross-shaft are



Calender for Weftless Cord Fabric



Morris Inside and Outside Trimmer

provided. The air cylinders simply maintain an even pressure against the cords to partially embed them in the first sheet of rubber. Farrel-Birmingham Co., Inc., Ansonia, Conn.

Tire Fabric Mill Humidifier

IN tire fabric mills the essential requisite humidification of the atmosphere is obtained by the apparatus here pictured. Tire fabric calls for continuous operation, and with the existing competitive conditions all machinery must be continually employed at its highest efficiency. These high speeds create great frictional heats, which must be allayed by the use of humidity. This has a definite function in production, as a properly humidified cotton fiber is more elastic, runs smoother, and makes for the maximum of production and a minimum of fiber breaks.

The humidifier shown herewith is a unit of all-copper construction operating under high pump pressure, and having high evaporative capacity, motor driven. The head is so devised that notwithstanding its high capacity all delivered water is wholly vaporized, as all free water is arrested in the humidifier. The water is delivered at high pressure through a filter, and impinges against a pin and is broken up. This head is novel in that it is operated under a low horsepower requirement.

The control stations employed have as their operating medium a hygroscopic member, the movements of which are registered by compressed air to operate diaphragm valves. These function to shut off or bring in the supply of water to the humidifier.

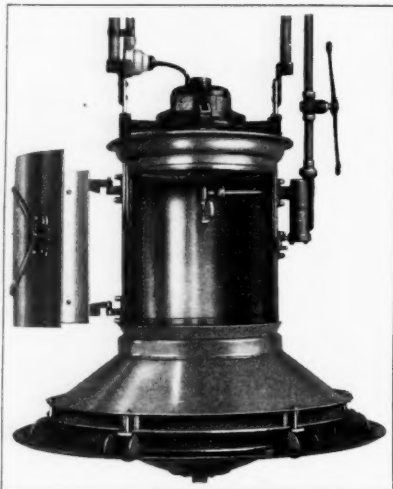
A regular performance of the control station is a control of humidity to within a 1° change in the wet or dry bulb reading. A potent feature of the device is that its operation is unaffected by temperature. If a setting of 65 per cent relative humidity is made, the control will hold to that humidity whether the temperature be 55 or 90°F. American Moistening Co., Providence, R. I.

Automatic Gasket Trimmer

THERE is here pictured the latest automatic machine for trimming rings, packings, gaskets, etc., ranging from 2 to 4 inches inside and to 8 inches outside

diameter. The knives used are 2 inches in diameter, making them the most practical and economical for these sizes. For larger sizes a machine is provided using standard 3-inch diameter knives.

In operating the machine the work is brought to the machine in as large lots as possible. The inner trimming is done first, then the outer to complete the job. The operator proceeds as follows: The table is adjusted to the elevation which allows the rim of overflow to enter the



Ideal Senior Humidifier

knives properly for shearing. With the right hand, a rubber ring is laid over the knives, and a small roller held in the left hand is pressed lightly on the ring to hold it against the knives which instantly starts it revolving. A guard under the upper knife holds the rubber to correct position and also protects it as it revolves. Once around completes the inside of each ring.

In trimming the outside, a holder is brought into action as shown in the illustration. This holder is removed from the table while trimming the inside of the rings. An upright pin is fastened to a slotted opening in the table and is held securely underneath with a thumb-nut. The ring holder revolves truly on the upright pin. The slot in the table allows the holder to

be moved up to or away from the knives for correct trimming. With the holder correctly placed, the rubbers are laid on with the right hand and taken off with the left. The machine has three speeds. This flexibility is important in the economical operation of the machine. The speed should be a little faster than the operator can handle the work. T. W. Morris, 6312 Winthrop Ave., Chicago, Ill.

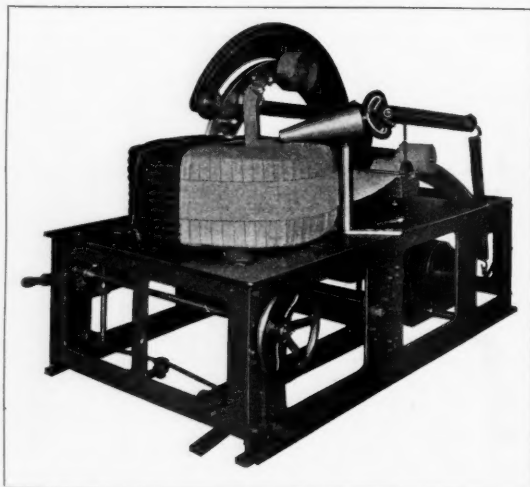
Hose Baling Machine

THE machine here pictured is the latest development in equipment for wrapping or baling 500-foot lengths of small hose. The same unit may be used for wrapping several 25- and 50-foot lengths in one bundle. A bundle wrapped with crinkled paper having multiple folded ends will withstand all sorts of abuse that may occur in transportation.

The machine is not limited, however, to the use of paper wrapping. Burlap or any other material may be wrapped equally well if so desired. These other materials are usually more expensive, and consequently a crinkled paper wrap is substituted wherever possible. It not only effects a saving but gives as good, if not better, service in transportation.

Simultaneously with the spiral wrapping a gummed peripheral strip may be applied to the bundle. This strip holds all the layers of the spiral wrapping together and prevents the possibility of the wrap to unravel. In detail, the baling operation is performed as follows. A coil of hose, hand fastened with temporary ties for handling at the wrapper, is laid flat on the bed of the machine upon several radially arranged rollers designed to revolve the bundle central with the overhanging arm. The latter supports the roll paper and the shuttle wrapping mechanism, which functions to apply the paper down through the center and around the sides of the bundle. A freely revolving conical roller bears strongly upon the revolving bundle and compacts it as the wrapping is applied.

The peripheral binding strip advances from a roll supported at one side in the rear of the bundle and passes through a wetting device to dampen its adhesive surface.



Terkelsen Model 12—Hose Wrapper

Thence it makes firm contact with the wrappings on the bundle under pressure applied by a vertical roller.

The machine is individually driven by a 2 horsepower motor. Under proper operating efficiency this machine will wrap 50 bundles per hour. The actual wrapping time per bundle is 30 seconds. Terkelsen Machine Co., 326 A St., Boston, Mass.

Rubber Hardness Testing Machine

THIS hardness testing machine was developed at the request of the A. S. T. M. sub-committee on rubber testing and is an approved instrument which embodies all the specifications as recommended by them.

This instrument is designed to secure indentation hardness, and is operated vertically. All loads are applied by gravity, eliminating friction. It is direct acting on the material under test. The action of the weights is controlled by cam operation. The lever gives progressive motion to the pressure foot and penetrator, making it impossible to apply loads out of proper sequence. Weights are supported directly on the penetrator which can only be changed to meet varying specifications for the particular requirements of testing.

The hardness number which is the penetration of the penetrator is read directly from the dial at the top of the instrument. This instrument is of special design applying no springs, thus assuring the most uniform and accurate loading throughout its range. Different types of penetrators and pressure feet may be used, as these parts are readily accessible for removal.

The setting and adjustment of the instrument for zero may be readily checked at any time during the operation of the instrument by allowing the pressure foot and penetrator to rest on the glass table and the dial rotated to the zero position.

The instrument is so constructed to be readily applicable to hardness testing of any rubber in slab form, rolls, and odd manufactured shapes. Various positions of the instrument may be obtained by swinging it about the supporting post.

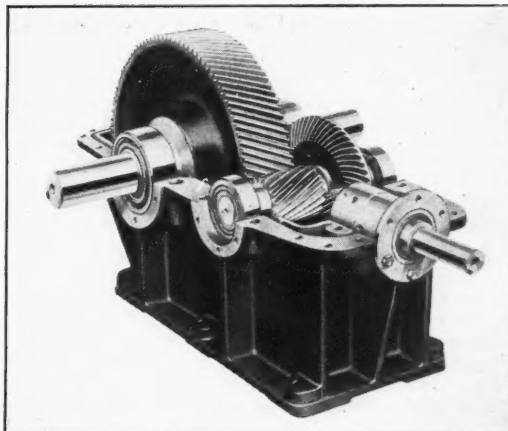
It is chromium plated and carefully finished to give the best service under all conditions. The base is also fitted with a recess for mounting over large pieces, such

as a tire, when the penetrator protrudes through the base in forming contact in such a test. This machine is also supplied with a convenient leather carrying case. Tinius Olsen Testing Machine Co., 500 N. 12th St., Philadelphia, Pa.

A New Right-Angle Drive

A LINE of right-angle drive speed reducers to supplement parallel shaft drives has been developed to take care of a growing demand for right-angle drives on certain types of installations. The new line includes both horizontal and vertical shafts.

One feature of this right-angle drive is a combination of single helical and spiral bevel gears. It is pointed out that single



Falk Right-Angle Speed Reducer

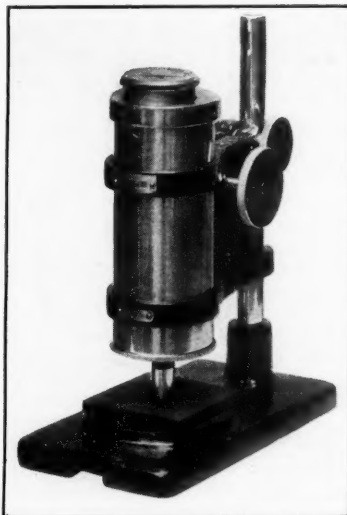
in combination with a high grade spiral bevel makes a quiet, cool running reducer, which has an initial efficiency of well over 95 per cent. Furthermore, this efficiency will be maintained throughout the life of the unit.

Another significant feature is the reversible construction of gears and shafts. If the gears become worn, shafts can be turned end for end to permit using the opposite and unworn sides of the teeth. This type of construction has proved successful in parallel shaft drives.

Ratings on the new line range from 1/16 h.p. per 100 r.p.m. on the smallest unit to 565 at 100 r.p.m. on the largest. Ratios are from 1.5:1 to 518:1.

The lubricating system of right-angle units is simple and self-contained. A continuous splash system keeps a film of oil on the working faces of gear teeth at all times. Rapid circulation of oil through the bearings results in remarkably cool operation and long life.

A complete line of welded steel motor beds has been developed to accommodate all motors coming within the capacities of the reducers. The Falk Corp., Milwaukee, Wis.



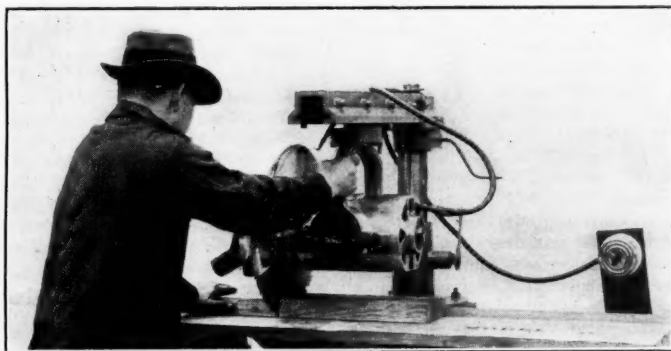
Olsen Rubber Hardness Tester

helical gears for the final reduction are easier to assemble than herringbone gears and that their efficiency is practically the same. An accurately cut single helical gear

Wood-Working Machine

IN A rubber mill there is always use somewhere for a special wood saw of the type here pictured. It is electric powered and embodies important new features, such as increase in power by 50 per cent, and more convenient arrangement of the dial plate for making angle settings. By means of various attachments, ripping, cross-cutting, mitering, beveling, and many other operations can be done on this machine.

A two-or-three phase, 5-horsepower motor of new design is employed providing more power at full speed with less temperature rise. The dial plate with degree markings and pitch scale is directly located in front of the operator and is notched at 45 degrees, which facilitates making adjustments for angle or bevel cutting. Provision is made for quickly changing tool attachments, and the cutting tool is guarded in all positions. De Walt Products Corp., Leola, Lancaster Co., Pa.



De Walt Wonder Worker

NEW INCORPORATIONS

AIRWAY RUBBER CORP., Oct. 24 (Massachusetts), \$25,000. G. Lorabati, 100 Burrill St., Roxbury, E. C. Mullen, 369 Columbia Rd., Dorchester, and J. M. Burr, 4 Bulfinch Place, Boston, all in Mass. Principal office, 537 Albany St., Boston. To deal in rubber goods.

B. N. B. NOVELTY CO., Dec. 31 (New Jersey), capital stock 10,000 shares common, par value \$10. W. Wolfe, L. Cohen, both of 253 S. Ninth St., Philadelphia, Pa., and M. E. Scales, 626 Schiller Ave., Trenton, N. J. Principal office, 244 E. Hanover St., Trenton. To manufacture rubber goods.

BERLAND SLIPPER CO., INC., Jan. 9 (New York), \$10,000. I. Kirchick, C. Davis, both of 781 Eastern Parkway, and C. Nettleson, 709 Osborn St., all of Brooklyn, N. Y. Principal office, Brooklyn. To deal in rubber and leather goods.

CAMDEN RUBBER & ASBESTOS CO., Jan. 16 (New Jersey), capital stock 100 shares common, no par value. B. M. Davis, 333 Arch St., M. Marritz, 425 S. Sixth St., both of Camden, and M. Milask, 119 Westmont Ave., Haddonfield, all in N. J. Principal office, 333 Arch St., Camden. To manufacture asbestos, rubber, and other materials.

ESSEX MFG. CO., Oct. 23 (Massachusetts), capital stock \$40,000 preferred and 1,000 shares without par value. M. T.

Eissey, 69 Westborne Rd., J. and C. Shalhoub, 39 Highview Ave., all of West Roxbury, and J. N. Attaya, 123 Brown Ave., Roslindale, all in Mass. Principal office, 75 Kneeland St., Boston, Mass. To deal in rubber.

EWING RUBBER CO. (New Jersey), capital stock \$100,000: 1,000 shares par value \$100. W. Plate, G. Kloch, both of Jersey City, N. J., and L. Henderson, Flushing, N. Y. Principal office, 15 W. State St., Trenton, N. J. To manufacture and deal in rubber goods.

KLEENWAY PRODUCTS, INC., Jan. 8 (New York), \$5,000. I. Mills, 201 Marcy Pl., E. Schlesinger, 930 Ogden Ave., both of Bronx, N. Y., and L. Harris, 590 West End Ave., New York, N. Y. Principal office, Manhattan. To deal in rubber goods.

Mico, Inc., Jan. 15 (New York), capital stock 1,000 shares, no par value. W. J. Greenop, 243 S. Third Ave., and G. B. and M. M. Greenop, both of 334 S. Fifth Ave., all of Mt. Vernon, N. Y. Principal office, Mt. Vernon. To deal in bakelite and rubber goods.

RUBBERCRAFT CO., INC., Jan. 14 (New York), capital stock 100 shares, no par value. M. Rabkin, 970 E. 179th St., Bronx, N. Y., K. Schneider, 86 Graham Ave., and V. R. Gersewit, 174 Prospect Pl., both of Brooklyn, N. Y. Principal

office, Manhattan. To deal in rubber goods.

UNITED AERONAUTICAL & RUBBER CO., LTD., Dec. 27 (Delaware), capital stock 30,000 shares preferred par value \$10 and 30,000 shares common without par value. H. E. Grantland, H. H. Snow, and L. H. Herman, all of Wilmington, Del. To manufacture and deal in rubber and leather in all forms.

VOGUE RUBBER CO., Jan. 2 (Delaware), capital stock 500 shares, no par value. M. S. Cook, A. L. Raughley, and J. M. Townsend, all of Dover, Del. To buy, manufacture, and sell rubber goods.

WIDS RUBBER CORP., Jan. 16 (Delaware), capital stock 50,000 shares, \$10 each. M. Shevlin, M. Callahan, and M. Cole, all of 509 Fifth Ave., New York, N. Y. To deal in, process, and manufacture rubber goods, compounded rubber products, and by-products thereof.

Legal

Treasury Decisions

WATERPROOF CLOTH. No. 43,750. Protest 252,871-G of Hudson Forwarding & Shipping Co. (New York). Merchandise in imitation of lizard skin, consisting of cotton cloth upon the surface of which has been superimposed a coating of cotton flock by some mucilaginous substance or composition which has impregnated the cloth sufficiently to make it impervious to water, or nearly so, which cloth is not used and sold for any of the purposes of waterproof cloth, held dutiable at 3 cents per square yard and 20 per cent ad valorem under paragraph 907 of the Tariff Act of 1922, as "filled or coated cotton cloths not specially provided for," and not at 5 cents per square yard and 30 per cent ad valorem under the provision of the same paragraph for "waterproof cloth composed wholly or in chief value of cotton or other vegetable fiber, whether or not in part of india rubber."

Opinion by J. Weller. On the authority of *United States v. Brown*, C. C. A., 136 Fed. 550, T. D. 26,124, *In re F. H. Shallus*, G. A. 4,905, T. D. 22,966, and *Knauth, Nachod & Kuhne v. United States*, 2 Ct. Cust. Appls. 479, T. D. 32,229, and other cases cited and followed in principle, the merchandise in question is held dutiable at the rate of 3 cents per square yard and 20 per cent ad valorem. *Treasury Decisions*, Vol. 56, No. 25, pp. 14-16.

BALLS. No. 10,519. Protests 360,599-G, etc., of B. Illfelder & Co. et al. (New York), and protests 358,094-G, etc., of F. W. Woolworth Co. et al. (San Francisco and New York). Merchandise classified as toys at 70 per cent ad valorem under paragraph 1,414, tariff act of 1922, is claimed dutiable at 30 per cent, paragraph 1,402.

Opinions by J. Sullivan. On the authority of *United States v. Woolworth* (16 Ct. Cust. Appls. 421, T. D. 43,136) and *United States v. Field* (12 id. 543, T. D. 40,738) colored hollow rubber balls, tenpin sets, and skittle games were held dutiable at 30 per cent under paragraph 1402 as claimed. *Treasury Decisions*, Vol. 57, No. 1, p. 36.

ELASTIC "SILENTBLOC" JOINT

THE importance of eliminating noise and vibration in automobiles is evident to everybody. It is no less essential on the score of economy, at least in coach building, electrical machinery, shipbuilding, paper-making, weaving, printing, and agricultural machinery.

The desirable results above indicated are secured by a singular adaptation of rubber in the construction of a joint known as the "Silentbloc." This is an elastic articulating joint, the principal functions of which are to eliminate wear, noise, vibration and cost of maintenance when applied as a bearing to oscillating mechanisms.

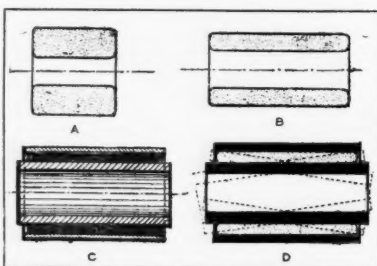
It consists essentially of an inner bush or tube and an outer concentric sleeve with the space between them filled with an elastic and insulating rubber compound called "Adherite." The latter is in the form of a cylindrical ring which is forced into position.

In the assembly of the rubber ring the longitudinal fibers are stretched, and, when in position between the steel sleeves, the effort exerted by the ring to regain its original shape exerts a radial compression of such intensity that no slip can take place between the rubber ring and the sleeves. The result is that all relative movement between the center and outer tubes is limited to a circular direction only. The permissible angular movement allowed by the stretch of the radial fibers is limited only by the fact that the external torsional movement applied must be less than the internal movement of resistance given by the frictional force of the rubber ring on the surfaces of contact.

The angle of torsion can be varied by altering the dimensions of the rubber ring

before assembly. In practice, approximately 45 degrees of movement on either side of the neutral position is allowed for. This can be increased or decreased to suit any particular application.

If the angular movement allowed be exceeded, slip will occur between the rubber and the sleeves. The Silentbloc will then

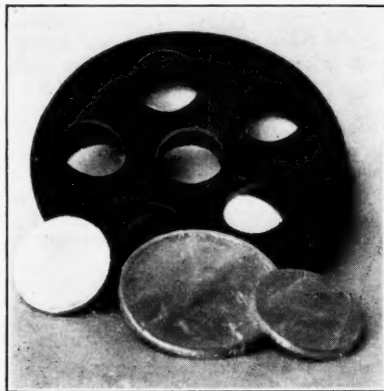


A—Rubber Ring Unstretched. B—Rubber Ring Stretched as in Assembly. C—Silentbloc Assembled. D—Silentbloc as Flexible Coupling

momentarily function as an ordinary bearing. In this case it will assume a new neutral position and will function correctly through a given angle on either side of this point. All lateral or end movement is practically impossible with the standard Silentbloc, but for special purposes, by reducing its length in comparison with the thickness of the rubber ring, lateral movement can take place, allowing the combination to function as a universal coupling.

It is thus readily seen that the device is adapted to many applications in the fields of automotive engineering, electrical and other machinery.

New Goods and Specialties



Coin Purse of Rubber

THE possibilities of rubber are limitless. In witness whereof is the novelty shown in the accompanying illustration. It is a coin purse that possesses several unique and useful features. The inventor, Donald Fairbairn, 200 S. Algonquin St., Detroit, Mich., claims that nothing now on the market compares with it. For it never needs to be opened or closed; yet the coins inside are always accessible and easily withdrawn, while they cannot possibly fall out. Every coin is visible, and any one can be selected and readily taken out through any of the holes. This is possible only because the purse utilizes the principle of rubber, and the openings are smaller than the smallest coin.

Other advantages also are claimed for this novel change holder. It can be washed as often as desired with hot water and soap. This not only keeps the purse sanitary, but its fresh new appearance at all times is thus assured. By means of this purse a swimmer can carry his change with him safely in the water merely by threading a piece of cord through one of the holes and tying it around his neck. The busy shopper with both arms full of packages will find the purse a convenience. She has but to insert her little finger through one of the holes, and that hand is free to hold parcels as well. As an advertising novelty this article will command attention as well as prove useful to the recipient personally. When made for this purpose, one side of the purse can be covered with advertising copy.

Any shape at all may be employed in the manufacture of this product. Then, too, almost any color or combination of colors will add to its attractiveness. Every hole is guaranteed not to tear when inserting or removing coins. Indeed, each hole can be stretched to the diameter of the purse without injuring the rubber. The purse may be fashioned of inner tube stock with the ends cemented together.

Rubber Improves Service

HOW often has a tempting array of food been spoiled because the salt stuck in its cellar, and the resulting annoyance ruined temper and dinner. But, it is claimed, no more will you be so inconvenienced if you use the Pasnik Shakeless Cellars. By simply pressing the button at the top, which operates the rod extending through the salt or pepper to the opening device at the bottom, the seasoning is released. Tiresome knocking or shaking is thereby eliminated.

To fill these cellars, unscrew the top. They are always closed and thus sanitary, for no moisture, germs, dust, or dirt can enter. The quantity and flow may be adjusted merely by turning the knob, to the right for decrease, to the left for increase.



Pasnik Shakeless Cellars

The cellars are made of uncorrodible silver composition or of fine crystal glass. The rod inside is of rubber composition. Each set of cellars is packed in a cloth-lined box. The Pasnik Co., Norwich, Conn.

Practice Makes Perfect

SOON spring will be here, and the call of the links will lure many a golf fan, the duffer as well as the expert. But how will the winter lay-off have affected your game? Not much—if you have been practicing indoors as well as out with the various devices designed to improve your playing.



Rubber Practice Golf Ball

One such item is the Turner practice golf ball, here illustrated. It is all rubber, perfectly round, and hollow. It keeps its shape and is sanitary. The rubber ball is the size and shape of a regulation golf ball, with tee attached, elevating it the height the professional tells the beginner to "tee up" his ball. It is always ready for use on the links, in your yard, home, or office, or any place where there is room to swing a club.

Primarily it is intended to afford the

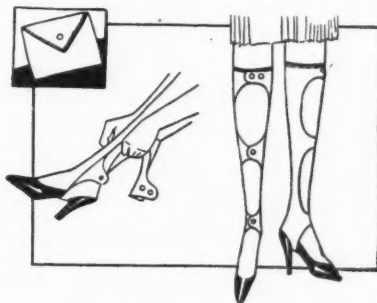
practice necessary to acquire that correct swing of the club which enables the player to become proficient in the use of the driver and brassie. But it is also a fine appliance for the professional to use in illustrating the stance, poise, and swing of the club to his pupil. To the man or the woman who wants to keep in trim this ball and a golf driver furnish excellent means, for such exercise is especially beneficial to the lungs and stomach muscles. Paul Turner, 1129 Book Building, Detroit, Mich.

Weighted Rubber Egg

A RUBBER novelty that has possibilities is the invention of D. Z. Evans, 1416 Vine St., Philadelphia, Pa. It is a rubber egg weighted at the lower section only sufficiently to regain and retain its upright position at all times. The upper section, made correspondingly light, is smooth surfaced outside and preferably of hard rubber. This article is registered under the significant trade mark of "Columbus Egg." It may be used as a combined paper-weight and ad carrier, as well as a plaything for children.

"Lido" Stocking Protectors

MUD-SPATTERED stockings are most embarrassing and untidy and altogether uncalled for in these days of rubber stocking protectors. "Lido" is a new



Rubber Protects Hosiery

model, which should appeal to the fastidious woman. These protectors are made of very thin rubber fashioned and form fitting, like a stocking. They come in the popular Palm Beach color in three sizes. They extend to the knee. "Lido" protectors are looped over the heel of the shoe and are fastened by snaps across the ankle, halfway up the leg, and below the knee, thus making two cut-outs on the front of the leg through which the hosiery shows. A dainty compact case, $3\frac{1}{2}$ inches square, holds a pair of "Lidos," and may be carried in the pocket or handbag, convenient for immediate use in all kinds of weather. Randolph Crede & Co., 354 W. 14th St., New York, N. Y.

Obituary

Herbert Du Puy

ANOTHER prominent figure in the industrial world has been removed by death. Herbert Du Puy, at one time president of the Pennsylvania Rubber Co., Jeannette, Pa., and chairman of its board of directors, died on January 10, at his home, 646 Morewood Ave., Pittsburgh, Pa., after a long illness. He was 73 years old. He is survived by his widow, a daughter, and nine grandchildren.

Mr. Du Puy was an associate of Andrew Carnegie in the steel business. During his lifetime the former gained distinction as president and chairman of the board of the Crucible Steel Co. of America, a coal operator, a real estate owner, and an art patron.

Edward J. Cooper

ILL health caused Edward J. Cooper, former general manager of the United States Rubber Co. footwear factories in Canada, to commit suicide by shooting himself on January 9. He had been associated with the rubber company ever since his graduation from Harvard in 1913, but last year he was compelled to resign because of his health. He was born in Pittsburgh thirty-eight years ago. He is survived by his parents, his wife, and two children.

Walter F. Bainbridge

WALTER F. BAINBRIDGE, pioneer in promoting the use of rubber heels and soles by shoe manufacturers, died on January 11 at his home, 1915 S. 57th St., Philadelphia, Pa. Mr. Bainbridge became associated with the Essex Rubber Co., Trenton, N. J., at the time of its inception twenty-three years ago, as vice president and general sales representative, with head-

quarters in Boston, Mass. He resided in New England until five years ago, when his health required a milder climate; so he moved to Philadelphia.

Mr. Bainbridge was born in Mount Holly, N. J., seventy-five years ago. His wife and two daughters survive him.

Veteran Rubber Man

JOHN BEHRENS, who died on January 21, 1930, at Midland Park sanatorium, had lived in Hasbrouck Heights, and later in Hackensack, N. J., for many years. He was born in Ottersberg, Province of Hamburg, Germany, on March 15, 1851, and came to this country at the age of 14. He was secretary and treasurer of the Mattson Rubber Co., Lodi, N. J., in 1888, and afterwards treasurer and president in 1914. He was also president of the E. J. McCormick Rubber Co., of New York, N. Y., and the Amolin Chemical Co., Lodi.

He served as councilman in Hasbrouck Heights several terms and was one of the organizers of the Building Loan and Savings Association, the Central Realty Company and the Pioneer Field Club. His widow, a son, and a daughter survive him.

W. Howard Hunt

WHOWARD HUNT, of 1942 E. McGalliard Ave., White Horse, N. J., one of the first men in that section to engage in auto tire vulcanizing, died at his home on January 6. He was 74 years old. About a quarter of a century ago Mr. Hunt began to vulcanize tires and became well-known through his work. He leaves his widow, two daughters, and a son. Interment was in Trenton, N. J.

Automobile Steering Wheels and Running Board

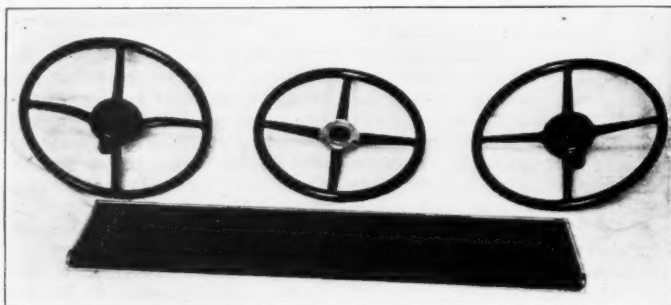
THE present-day motorist has the choice of at least three distinct types of material for the outer or gripping surface of his steering wheel. These are molded plastic, wood, and hard rubber. The characteristics of these materials cannot be pictured but are well known.

Referring to the illustration, the wheel

described as "Inland," which takes a particularly lustrous finish.

In the center of the picture is a wood rim, metal spider steering wheel, and on the right is an aluminum spider, hard rubber rim wheel.

Below the wheels is pictured a running board of special construction. It is made



Inland Steering Wheels and Running Board

at the left has a frame of steel covered with cast aluminum over which is applied a surface consisting of the molded plastic

of steel with a steel insert covered with rubber. The latter covers the top and front face of the board.

Rubber Manufacturers Association

A meeting of the Heel and Sole Division of The Rubber Manufacturers Association, Inc., was held at the Hotel Copley-Plaza, Boston, Mass., January 16, 1930, and the following recommendations were made.

With the exception of solicitations received from projects local to the municipalities in which the manufacturing plants of members are located, all requests for cash contributions or merchandise donations, that is to philanthropic, charitable, commercial, civic, or other enterprises, should be referred to the Association for attention as industry rather than as individual company matters. This policy is similar to that adopted by other manufacturing divisions of the industry.

A resolution was adopted condemning giving away goods in excess of orders, as an unsound trade practice which might well be discontinued with consequent benefit to all factors in the trade.

Furnishing shoe repair tags to the finders and repair trade free of cost is a wasteful practice. Tags should not be furnished at less than actual cost.

Manufacturers should discontinue purchasing or contributing for space, or exhibiting their goods in any way in connection with leather footwear style shows. This policy is similar to that adopted by other divisions in the industry.

Paying commissions to jobbers' salesmen is unfair and unsound trade practice and should be immediately discontinued.

Members should discontinue the practice of contributing for advertising space in catalogs or any other publications issued or published by any jobber or retail customer and paying for advertising space in newspapers or magazines which has been contracted for or is controlled by customers.

R. H. Goebel, assistant secretary of The Rubber Manufacturers Association, Inc., was elected chairman of the Heel and Sole Division for the ensuing year.

S. A. E. Officers

Edward P. Warner, formerly Assistant Secretary of the Navy for Aeronautics, was announced as the new president of the Society of Automotive Engineers, Inc., at its annual dinner in the Hotel Pennsylvania on January 9.

Other newly elected officers and members of the council are: Vice Presidents, Chance M. Vought, representing aircraft engineering; Bruce G. Leighton, aircraft engine engineering; Otis D. Treiber, Diesel engine engineering; Arthur J. Scaife, motor truck and motor coach engineering; George L. McCain, passenger car engineering; William N. Davis, passenger car body engineering; John Younger, production engineering; Frederick C. Horner, transportation and maintenance engineering.

Members of the Council, Ralph R. Teetor, Frederick K. Glynn, Arthur W. S. Herrington.

Treasurer, C. B. Whittelsey, Jr.

Editor's Book Table

Book Reviews

"Rubber Producing Companies—1929." Compiled by The Mincing Lane Tea and Rubber Share Brokers Association, Ltd., 1929, London. Published by *The Financial Times, Ltd.*, 72 Coleman St., London, E. C. 2, England.

This annual is a complete and authoritative collection of data for the information of the investor in British controlled rubber and tea estates. The material given includes lists of officials, capital, acreage, tenure, purchase price, accounts, production, forward sales, dividends, highest and lowest prices of shares, etc.

"Gummi-Kalender 1930." Jahrbuch der Kautschuk-Industrie. Ein Hilfsbuch für Kaufleute, Techniker, Händler und Reisende der Kautschuk, Asbest- und Celluloid- Branche. Edited by Drs. Ernst A. Hauser and Kurt Maier. Published by Union Deutsche Verlagsgesellschaft, Zweigniederlassung Berlin. Cloth, 3 $\frac{3}{4}$ by 5 $\frac{1}{2}$ inches, 454 pages.

The "Gummi-Kalender 1930" is the fifteenth edition of this year book for merchants, technicians, dealers, and salesmen of the rubber, asbestos, and celluloid industries. As usual, the information in it has undergone careful revision. Thus the technical section in Part I contains directions for the newest methods of physical testing in connection with rubber mixings. Then there is a short review of the progress of rubber research during 1928-29.

Many of the calculation tables have been amplified and, where necessary,

completely rearranged. The chapter on the most important compounding ingredients for rubber has been thoroughly revised, and the statistical data have been brought up to date and new tables have been included. Thus we find an interesting table concerning production in the German tire industry during 1928. Once more the editors have succeeded in compiling a useful and handy little reference book.

"National Waste Review." Published by the Trade Promotion Bureau of the National Association of Waste Material Dealers, Inc., 1109 Times Building, New York, N. Y. Paper, 68 pages, 8 $\frac{1}{2}$ by 11 $\frac{1}{2}$ inches.

The first issue of this monthly magazine is dated January, 1930. Its publication is authorized by the Board of Directors with the thought that it will serve as a means of presenting the Association and its aims to dealers, consumers, and producers of waste material throughout the world. The contents comprise regular features devoted to waste trade problems, market reviews, new firms and corporations, and traffic information, followed by a Salvage and Reclamation Section, which includes clearing house offerings of machinery.

The scope of service proposed for this magazine is broad and extremely important industrially. It has received the endorsement of the leaders in the waste trade.

Corp. on November 7, 1929, giving a brief account of aeronautical developments. It is profusely illustrated in rotogravure. Blue suède cover with silver stamp, 9 by 12 inches, 23 pages.

GREETINGS, CALENDARS, AND SOUVENIRS

The staff of INDIA RUBBER WORLD gratefully acknowledges the following holiday souvenirs:

The Claremont Waste Mfg. Co., Claremont, N. H., gave a good looking thermometer fashioned like a desk clock.

A novel ash-tray attractively fashioned in red and black came from the Flexo Supply Co., 4459 Manchester Ave., St. Louis, Mo.

Kippy-Kit, a combination whisk-broom and shoe polisher in a serviceable case, was the unusual and useful gift of The Akron Equipment Co., Akron, O.

Good-looking wallets of convenient size were sent by The Clyde E. Lowe Co., Cleveland, O.; H. Muehlstein & Co., Inc., 41 E. 42nd St., New York, N. Y.; and The Stamford Supply Co., Shippen Ave., Stamford, Conn.

Pocket memorandum books containing information and maps of value were provided by General Electric Co., Schenectady, N. Y., and John Royle & Sons, Paterson, N. J.

The remembrance of The Cleveland Liner & Mfg. Co., Cleveland, O., took the form of a radio log.

Beautiful cards containing appropriate Christmas and New Year greetings were received from The Akron Equipment Co., Akron, O.; The Cleveland Liner Mfg. Co., Cleveland, O.; Davol Rubber Co., Providence, R. I.; Harriss & Vose, 60 Beaver St., New York, N. Y.; Mitsui & Co., Ltd. 65 Broadway, New York, N. Y.; Oak Rubber Co., Ravenna, O.; Joseph Stokes Rubber Co., Ltd., Welland, Ont., Canada; Paul E. Vernon & Co.; and Compañia Hulera El Popo, S. A., Mexico City, Mexico.

Artistic and useful wall calendars were forwarded by Akron Standard Mold Co., Akron, O.; The Aluminum Flake Co., Akron, O.; American Zinc Sales Co., Columbus, O.; T. C. Ashley & Co., 683 Atlantic Ave., Boston, Mass.; E. H. Clapp Rubber Products Co., Boston, Mass.; The Garlock Packing Co., Palmyra, N. Y.; General Electric Co., Schenectady, N. Y.; Oak Rubber Co., Ravenna, O.; Omo Mfg. Co., Middletown, Conn.; Northwestern Rubber Co., Litherland, Liverpool, England; John Robertson Co., Inc., Brooklyn, N. Y.; The Rubber Service Laboratories Co., Akron, O.; and St. Louis Rubber Cement Co., Inc., 3951-53 Laclede Ave., St. Louis, Mo.

New Publications

"Bristol's Recording and Vacuum Gages," Catalog No. 1009. The Bristol Co., Waterbury, Conn. The measuring elements, clocks, charts, and other essentials entering into their construction and use are clearly illustrated and described. Supplementary is a complete index of charts available for Bristol's recording pressure and vacuum gages.

"U. S. Tire Retailer." Advertising Issue, Vol. III, No. 8, November, 1929. This special issue of the house organ of the United States Rubber Co., New York, N. Y., is a collection of advertisements in color covering the company's tire advertising program for 1930. This advertising will present the value and advantages of U. S. Royal

tires through every national medium and many of the important dailies of the United States, also by blotters, wall hangers, etc.

"Engineering Achievements—1929." Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. This booklet of 36 pages describes in many special articles the present-day application of electricity to modern industrial problems of power application, heating, lighting, transportation, testing, medical, and other purposes.

"America in the Skyways" is a beautiful booklet issued by The Goodyear Tire & Rubber Co., Akron, O., as a souvenir of the ZRS-4 Ring Laying Ceremony by the Goodyear-Zeppelin

The Rubber Industry in America

OHIO

American Hard Rubber Co.'s Akron, O., plant, according to W. E. Johnson, superintendent, will enter a period of increased production with a schedule that will justify a return to an almost normal employment basis early this month. February releases from car manufacturers are responsible. The rubber company has experienced an excellent trade demand during the winter months, keeping its force well occupied.

The Massillon Rubber Co., Massillon, O., held its annual meeting on January 10. According to the report to stockholders, the year just closed was the best in the history of the company. Stockholders elected to the board of directors were: J. G. Lester, Robert H. Hess, Albert Geis, George L. Geis, B. W. Groff, H. V. Ress, C. E. Schworm, J. F. Tschan, and A. Frank Boerner. Officers named were: J. G. Lester, president; Robert H. Hess, vice president; H. P. Croxton, secretary-treasurer; Helen Bonnevier, assistant secretary; and A. Frank Boerner, superintendent.

The University of Akron will offer three fellowships in the study of rubber chemistry during the academic year 1930-31. These fellowships carry a stipend of one thousand dollars each and exempt the holder from all fees and deposits. They are of an industrial character in that they are supported by the Goodyear, Goodrich, and Firestone rubber companies. It is possible to complete the work required for a master's degree while holding one of these fellowships. Application blanks will be sent on request. Application should be made before April to H. E. Simmons, University of Akron, Akron, O.

The Hankins Rubber Co., one of the few independently owned Massillon, O., industries, looks to 1930 as its biggest year since organizing in 1928. The company has an improved process for manufacturing rubber gloves, its chief product. This glove, only recently produced, is in wide demand, and an expansion in the company's business is expected as a result. The plant already is operating to capacity; so officials plan enlarged production facilities.

At a recent stockholders' meeting it was reported that the company's business more than doubled during 1929. The stockholders elected S. Bert Hankins, Charles G. King, Mrs. Mary Yohe, William J. Ries, and Harry Conrad, directors. S. Bert Hankins was elected president, Laura E. Hankins, secretary-treasurer, and William J. Ries, vice president.

Mrs. Thomas A. Edison in a recent interview declared, "My husband's transcending ambition today is to turn the weeds of our fields into rubber and make his own beloved country economically independent of the rest of the world for its rubber supply..... Oh, everything is turned to rubber in our family. We talk rubber, think rubber, dream rubber. Mr. Edison refuses to let us do anything else. For example, goldenrod has ceased to be simply our national flower—it is now a potential rubber plant."

Firestone Park Trust & Savings Bank directors, Akron, O., on January 15 selected E. A. Oberlin, Jr., as president of the institution organized and presided over by Harvey S. Firestone, Sr. The directors' action followed the annual stockholders' meeting at which two new directors, Russell A. Firestone, and J. J. Shea, treasurer of the Firestone Tire & Rubber Co., were added to the board. Young Mr. Firestone was also elected vice president to fill the vacancy created by the promotion of Mr. Oberlin.

The Swinehart Tire & Rubber Co., Akron, O., closed since last October on account of bankruptcy proceedings, will resume operations on February 1, it was announced on January 18 by T. F. Walsh, president of the company, to whom it was sold for \$53,000. More than 300 men will be employed at the start, it was reported.

The appraisal of the Swinehart plant and equipment was approximately \$100,000. With this sale, the large assets, with the exception of "accounts receivable," all have been liquidated. Mr. Guinther, receivership trustee, said.

The sale involved land, buildings, equipment, and patents. The tire stock left when the company suspended manufacturing operations has been sold. New material is now on order.

Textile Leather Products Co., Newark, N. J., according to J. D. Lipman, vice president, will move to Toledo, O., where it will build a plant for manufacturing pyroxylin and rubber-coated fabrics, besides artificial leather. The expenditures will approximate one million dollars. Employment for about one thousand workers will be provided.

Herbert G. Day, second vice-president and chief engineer of the Philadelphia Rubber Works Co., Akron, O., is to become chief executive of that company to succeed the late John S. Lowman. Directors of the company are scheduled to meet in Akron early in February, when Mr. Day will be elected.

The Harshaw Chemical Co., Cleveland, O., has announced the opening of an Akron, O., office and warehouse at 309 Silver St., in charge of Russell Farley. Telephones: Main 4040 and Main 1390.

John Stanley Lowman, late president of the Philadelphia Rubber Works, Akron, O., in his will, filed recently for probate, left an estate of personal property valued at \$50,000. The entire estate is bequeathed to his widow, Mrs. Jessie B. Lowman, during her lifetime. At her death it is to be divided equally among their three children. The First City Trust & Savings Bank is executor.

Admiral Tire & Rubber Co., Coshocton, O. The Coshocton National Bank has been named receiver in litigation proceedings against the Admiral Tire & Rubber Co. by T. L. Montgomery, a trustee. The latter states that the company failed to meet requirements specified in the issuance of \$50,000 in first mortgage bonds of June 1, 1926. The tire company was formed in June, 1923, and manufactures Admiral cord tires and tubes and Prince cord tires. Its capitalization is common stock, \$100,000, and preferred, \$100,000.

D. T. Henne, vice president of the Admiral company, recently announced his intention of joining the Monarch Rubber Co., Canton, O., to be in charge of sales.

George W. Sherman, machinery broker and original dealer in used rubber machinery, Akron, O., was unanimously elected president of the Akron board of education on January 6. He had previously served as vice president.

R. C. Gunther has joined the Cooper Corp., Findlay, O., as factory manager. He has a long record of successful production experience behind him, having served with the Inland Rubber Co., Chicago, Ill., McKone Tire & Rubber Co., Millersburg, O., and Mohawk Rubber Co., Akron, O.

The Falls Rubber Co. plant, Cuyahoga Falls, O., expects to step up its production program. At a sales conference held last month company officials declared that the increased business enjoyed warranted immediate added production plans.

American Management Association, 20 Vesey St., New York, N. Y., held a Personnel Administration Conference at Hotel Statler, Cleveland, O., on January 29, 30, and 31. C. S. Ching, director of industrial and public relations, United States Rubber Co., New York, N. Y., presided at the morning session on January 30. The next morning E. H. Little, assistant supervisor industrial relations, United States Rubber Co.,

read a paper on "What Is The Dismissal Wage Policy of the United States Rubber Co. and What Are Its Effects?"

Goodyear Operations

Increased activity was visible in all departments at The Goodyear Tire & Rubber Co. plant, Akron, O., early last month as employees resumed work on a full-time basis. The five-and-one-half-day week went into effect on January 2, and plant executives expect production to be steadily increased. The larger output, it is said, is demanded for business already contracted for, and indications point to a continued increase in the number of tires made daily.

Goodyear's blimp "Puritan" was damaged because of poor visibility shortly before daylight on January 11 when it ran into a mountain side ten miles east of Campton, Ky. Neither V. L. Smith, pilot, nor A. C. O'Neil, navigator, was injured. Damage to the craft was not so serious as at first believed, and its salvaging was done by the airship repair department of the Goodyear-Zeppelin Corp.

The Goodyear blimps traveled 225,600 miles during 1929, according to an annual report on their operations recently released. The blimps spent 4,512 hours in the air and carried 8,559 passengers in the course of 5,006 flights. The blimps are named "Pilgrim," "Puritan," "Volunteer," "Mayflower," "Vigilant," and "Defender."

Paul W. Litchfield, president of the Goodyear company, was elected to the board of directors of the Monarch Fire Insurance Co., Cleveland, O., recently organized.

J. G. Swain, former vice president of the Firestone Steel Products Co., Akron, O., rim manufacturer, was made head of the Goodyear Rim Sales Department. R. S. Burdette, former manager of Rim Sales, becomes assistant manager of the department, and will continue his activities in the field on Rim Sales.

Goodrich Notes

District sales and advertising managers of The B. F. Goodrich Rubber Co., Akron, O., were in conference at headquarters offices several days last month. Sales and advertising programs occupied their attention during daily sessions.

Service totaling 142 years is the record of four men in the production department of the Goodrich company. Ed Wilhelm, calender expert, is the oldest active employee with a record of 42 years of continuous service. Fred Meier, known as "the guardian of quality" in rubber stock, is next with 38 years. Arthur Capron, who recently returned from Japan, ranks third with 32 years, and John Noonan, production superintendent, is fourth with 31 years.

Phil J. Kelly, Goodrich advertising manager, recently was made vice president of the Association of National Advertisers and chairman of the newspaper committee.

General Tire and Rubber Co.

Newly Elected Secretary

Directors of the General Tire & Rubber Co., Akron, O., elected John G. Stoller secretary of the company at the annual meeting of the board held late last year. He had been assistant secretary since 1927. Mr. Stoller, however, has been affiliated with the General company ever since it was established in 1915. For three years prior



John G. Stoller

to that he had been associated with William O'Neil and W. E. Fouse, now General president and first vice president respectively, in the operation of the Western Tire & Rubber Co., Kansas City, Mo., and came to Akron with Mr. O'Neil and Mr. Fouse. A. B.

Stiller, present advertising manager, also left with them. Since 1917 Mr. Stoller has been in charge of purchases for the company.

He is a graduate of Oberlin College and a native of Galion, O. His home is at 659 Palisades Ave., Akron.

Mr. Stoller's promotion was the only change made in the executive staff at the annual meeting. The other officers are Wm. O'Neil, president and general manager; W. E. Fouse, vice president and assistant treasurer; Charles J. Jahant, vice president and factory manager; and Charles Herberich, treasurer. The reelected directors are as follows: Wm. O'Neil, W. E. Fouse, C. J. Jahant, T. F. O'Neil, and G. F. Burkhardt, all of Akron, and J. A. Diebold and R. W. Gallegher, of Cleveland.

Test Crews

To the test crews of the General company goes the job of "pounding the life" as quickly and as thoroughly as possible out of the best tires its engineers can devise. Day after day the tires are subjected to gruelling tests, both in the factory laboratories and on the highways. Three units of the General Tire Test Fleet recently went South for the winter, to test General tires on the Florida highways before heading west to seek more heat on the roads of California and other far western states. At the same time, all winter long, other tires will be pounding away on the ceaseless circuit of the tread-mills in the experimental laboratories in the Akron plant.

Goodrich-Miller Merger

Purchase of the Miller Rubber Co. by The B. F. Goodrich Co., both of Akron, O., for consideration approximating \$10,000,000, was approved on January 20 by the Miller board of directors. The Goodrich executive committee offered to buy the Miller assets, including good will, for 113,504 shares of Goodrich common stock and to assume the Miller liabilities, which were listed at \$4,197,471 for 1928, except liabilities to stockholders as such. Since the common shares offered by Goodrich represent \$4,823,920 at the January 20 closing price of \$42.50 per share, the grand total offered for the Miller company approximates \$10,000,000.

The offer was accepted subject to necessary approval of Miller stockholders at a meeting called for February 17. Such approval will require an affirmative vote of two-thirds of each class of stock. The Goodrich directors met on January 23 and approved the proposal.

The Miller Co. makes automobile tires, tubes, and tire accessories, rubber footwear, druggists' sundries, toy balloons, and rubber balls. Miller is the second oldest rubber company in Akron, having been founded thirty-eight years ago by Jacob Pfeiffer, now chairman of the board.

The merger of Goodrich and Miller will place Goodrich in second place among the rubber companies of the world and will

give Akron the two largest corporations in the rubber industry, The Goodyear Tire & Rubber Co. and Goodrich, it is asserted by the Goodrich officials. Heretofore Goodrich has been slightly smaller than the United States Rubber Co.

This merger is one of the largest ever effected in the rubber industry. Last year Goodrich absorbed the Hood Rubber Co., Watertown, Mass. In 1912 Goodrich took over the old Diamond Rubber Co., then one of the most promising tire manufacturers. It has acquired or built plants at Los Angeles, Calif.; Kitchener, Ont., Canada; Leyland, England; Yokohama, Japan; Paris, France; and Silvertown, Ga., where it has the largest cord mill in the world. It also has twenty-five acres at Atlanta, Ga., upon which it proposes soon to build. In addition to being one of the four major tire manufacturers in the world, Goodrich manufactures approximately 32,000 different rubber products. It controls many recent and "revolutionary" patents on rubber making processes.

James D. Tew, Goodrich president, the "man behind the mergers," is noted in the rubber industry as the only "second generation" chief executive. His father, Harvey W. Tew, founded the company, then known as Goodrich & Tew Co., in 1870 with Dr. B. F. Goodrich for the manufacture of fire hose.



Goodyear Officials Inspecting the
World's Largest Truck Tire

Largest Truck Tire

The largest balloon truck tire ever constructed for commercial use is shown in the accompanying illustration just after it had come from the molds of the Akron, O., plant of The Goodyear Tire & Rubber Co. R. S. Wilson, sales manager, (right), and C. C. Slusser, factory manager, (left), made a personal inspection of the huge casing. The new tire is for trucks of five tons and over.

Curing the first 13.50-20 truck and bus balloon tire recently marked the setting of a new milestone in Goodyear tire history. The huge tire was the first of a set of ten to be used by the Texas Electric Service Co., Dallas, Tex., on a Model A P Mack six-wheel truck and a four-wheel Highway Trailer.

The load capacity of 13.50-20 tires is 8,800 pounds, greater than that of a 10-inch solid, 12-inch cushion, dual eight-inch high pressures, or dual 9.75 balloons. The recommended air pressure is 95 pounds.

The Goodyear company has started production of the 13.50-20 casings and will have them available as a regular stock product in the future.

1929 G. E. Sales

Orders received by the General Electric Co., Schenectady, N. Y., during 1929 amounted to \$445,802,519, compared with \$348,848,512 for the preceding year, an increase of 28 per cent. President Gerard Swope has announced. Orders for the fourth quarter of 1929 totaled \$108,398,049, compared with \$88,162,049 for the last quarter of 1928, an increase of 23 per cent.

INDIA RUBBER WORLD has moved its Akron office from the Akron Savings & Loan Building to 232 Wiener Arcade, 36 Howard St., Akron, O. George S. Schworm is the local representative.

NEW ENGLAND

Dunlop Tire & Rubber Corp., Buffalo, N. Y., has opened, under local management, two service stations known as Dunlop Direct Stores. One is at 5 Webster St., Rockland, Mass., the other, 28 Cohannet St., Taunton, Mass.

United Shoe Machinery Corp., has announced the removal of its general offices, effective February 3, to 140 Federal St., Boston, Mass. The telephone number, Liberty 9100, remains unchanged. The company cordially invites inspection of its executive offices on and after February 19.

Commander Charles Belknap, president of the Merrimac Chemical Co., Boston, Mass., has been appointed a director of the Monsanto Chemical Works, St. Louis, Mo., which recently acquired the Boston firm.

H. L. Ross recently assumed his new duties as head of the bicycle tire sales for the Fisk Tire Co., Inc., Chicopee Falls, Mass.

The B. F. Goodrich Co., has appointed J. Irving Wood, for fifteen years its representative, as manager of rubber footwear sales for New England, with headquarters in Brockton, Mass. Mr. Wood has been with the rubber industry for twenty-five years. He has served with the Lawrence and Crocker rubber companies. At one time he was general manager of the Hope Rubber Co., Providence, and director and general manager of the Portland Rubber Co.

Paul W. Litchfield, president of The Goodyear Tire & Rubber Co., Akron, O., in his address as principal speaker at the Boston, Mass., Chamber of Commerce Luncheon on January 16, emphasized the nation's need for development in the air and boomed Zeppelins for ocean travel.

The Firestone Tire & Rubber Co.,

Akron, O., will build a service and distributing station at 13-59 Broadway, Cambridge, Mass. It is also planning a service station at 40 Arsenal St., Watertown, Mass.

Ralph Holbrook, for twelve years chief chemist of the Beacon Falls Rubber Shoe Co., Beacon Falls, Conn., was recently given a farewell party by his associates. He resigned to enter the employ of the Sponge Rubber Products Co., Shelton, Conn., on January 1.

C. C. Slusser, vice president and factory manager of The Goodyear Tire & Rubber Co., Akron, O., and Samuel R. Steere, manager of the Goodyear cotton fabric division, were the speakers at a get-together banquet for executives of the Devon Mills, New Bedford, Mass., and the Goodyear mills of Connecticut, held at the New Bedford Hotel on January 7. During the day the Akron representatives inspected the New Bedford plant.

The Hood Rubber Co., Inc., Watertown, Mass., has introduced an entirely new type of stormy weather footwear called the Oxford Model Raintog. It is washable, and comes in suede-finish in all the newest shades.

Sears Roebuck & Co., Chicago, Ill., has opened a new branch store at Waltham, Mass., for retailing rubber products and other merchandise direct to its customers in that section.

The Seamless Rubber Co., New Haven, Conn., as a result of a 10 per cent decrease in orders, has cut the working force from 1,300 to 1,200. The management, however, is optimistic for the future and a general resumption of operations in all departments is predicted before the first of March.

The Whitney Blake Co., Hamden, Conn., manufacturer of insulated wire and cables, reports normal business.

Boston Shoe Show

Rubber men were very conspicuous at the Eighth Annual National Boston Shoe Style Show at the Hotel Statler, Boston, Mass., on Jan. 14, 15, 16, 1930. The United States Rubber Co., New York, N. Y., was represented by Harry C. Brown, George F. Nangel, Charles Hicks, P. A. Crafts, Malcom Erving, and R. E. Farnham. The company featured a very attractive booth exhibit of LaFlex rubber soles in non-marking, Uskide in browns and blacks. It also had a full line of sport crepe soles in eight new colors.

Quabaug Rubber Co., North Brookfield, Mass., was represented by F. C. Rooney, sales manager, and H. F. Mason, president. This company had a complete display of its Armor-Tred rubber heels and rubber work shoe soles.

The Essex Rubber Co., Trenton, N. J., also had a very extensive exhibit of

rubber soles and heels, as well as sport shoes. The new Essex rubber heel insert for sport shoes aroused considerable interest. It is a small rubber disk that fits into the heel of the shoe. It comes in all colors. H. G. Anderson, H. T. Fogg, New England representative, R. H. Phillips, New York representative, and L. M. Oakley, sales manager, were on duty at the company booth.

Other companies with booths at the show were: Hanover Rubber Co., West Hanover, Mass., sport soles and heels; The Seiberling Rubber Co., Akron O.; Stedfast Rubber Co., Mattapan, Mass.; and the Balloon Rubber Heel Co., Beverly, Mass.

James Clifford, of the Stedfast Rubber Co., and Harry Laybolt of the Balloon Rubber Heel Co., were on the general committee in charge of the show.

NEW JERSEY

Conditions have changed in the rubber industry in New Jersey during the past month; business has dropped off a little in mechanical rubber goods. The production of tires and tubes, however, remains good. Hard rubber plants, which had been operating overtime, are now working regular hours. Some factories are functioning at full capacity on hose and belting, while others report orders decreased. Some plants making rubber bands and jar rings have laid off employees. Manufacture of rubber heels and soles has also declined. But all the manufacturers are optimistic and believe in a 100 per cent future business.

The Pocono Rubber Cloth Co., Trenton, N. J., reports improved business and the receipt of several large orders after the first of the year.

The Thermoid Company, Trenton, N. J., is operating day and night shifts in all departments. The company is busy with large orders for radiator hose for some of the large automobile manufacturing concerns. The company's new additions are used for manufacturing asbestos brake lining.

F. Robert Lee, vice president of the Thermoid Company, sailed on January 15 for an extended business tour through Europe to visit all the Thermoid interests in the principal cities.

The Luzerne Rubber Co., Trenton, N. J., announces that the rubber situation shows some improvement.

The Ajax Rubber Co.'s plant at Trenton, N. J., is being leased for manufacturing purposes.

The Rubber Manufacturers' Association of New Jersey will hold its next meeting at the Trenton Club, Trenton, N. J., this month. A prominent rubber man will be the principal speaker.

The Lambertville Rubber Co., Lambertville, N. J., has been ruled by the Court of Chancery to pay \$2,675 personal property tax. The receivers for the old Lambertville Rubber Co. refused to pay the 1929 assessment since their property was sold at auction in December, 1928.

The Murray Rubber Co., Trenton, N. J., has laid off 90 men in the mechanical rubber goods department, as part of a tentative plan to devote its entire resources exclusively to the manufacture of tires and tubes. Rapid growth of the Murray chain stores, which now total more than 1,200, is given by Alfred H. Branham, general manager, as the reason. The tire and tube facilities of the plant have reached capacity, Mr. Branham said, and additional space is necessary to supply demands of the chain system. The officials are seriously considering abandoning the mechanical department and utilizing that space for tires and tubes. At present the stores are located in principal cities east of the Mississippi, but the company plans a number of stores for Texas. The me-

chanical goods department has been closed to take inventory and to determine what should be done to meet the increased demand for tires. Mr. Branham said the Murray plant soon may be doubled.

C. Edward Murray, Jr., president of the Murray company, has been on an extended business trip through the South, visiting Murray branches.

Abram M. Sawyer, former general manager and superintendent of the Vulcanized Rubber Co., Morrisville, Pa., was given a testimonial dinner recently at a Trenton hotel. He was employed at the plant for forty-one years. Stanley H. Renton, president, Joseph McLean, vice president, and A. G. Lingley, comptroller, of the rubber company, were among the speakers. A beautiful smoking set was presented to Mr. Sawyer, as well as a set of engraved resolutions.

The Essex Rubber Co., Trenton, N. J., states that the 1930 business outlook is very good and that new orders are already coming in. The plant is running normally at present.

The Puritan Rubber Co., Trenton, N. J., experienced a slight decrease in

business, which is usual for late winter. However, company officials expect the usual volume of business for spring and summer.

The Combination Rubber Co., Trenton, N. J., reports normal business with good prospects. The company has not yet selected a general sales manager to take the place of Arthur H. Massey, who resigned several weeks ago.

The Joseph Stokes Rubber Co., Trenton, N. J., is operating its plant 90 per cent. The concern states that the prospect for spring business is very bright. The company's plant at Welland, Ont., Canada, is running at full capacity.

The Pierce-Roberts Rubber Co., Trenton, N. J., announces that business has fallen off a little over the previous month. Conditions for January were about normal.

William H. Sayen, president of the Mercer Rubber Co., and George T. Gretton, secretary of the Home Rubber Co., both of Trenton, N. J., were members of the Mercer Court Grand Jury for January.

The Vulcanized Rubber Co., Morrisville, Pa., reports good business and a very promising outlook for the coming year. The company, one of the oldest in the country, manufactures hard rubber goods exclusively.

Chemical and Physical Experimental Laboratory

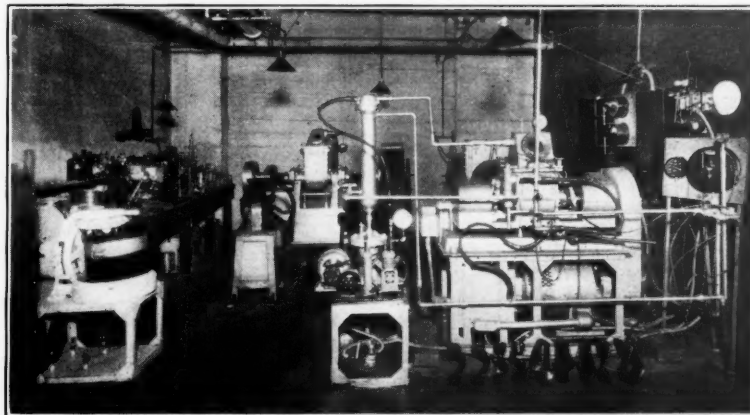
A new experimental chemical and physical testing laboratory has recently been installed by The J. H. Day Co., Cincinnati, O., at its New York office, 62 Murray St. A general view of the laboratory is presented showing the completeness of its machine equipment. This includes machines for grinding, sifting, and mixing of lighter materials, and two Day Mogul type mixers of 2½ and 5 gallons capacity for handling heavy masses.

These machines are equipped with variable speed controls, permitting agitator speeds of from 10 and 15 r. p. m. to 40 and 60 r. p. m. respectively on the two agitator shafts. They are also equipped with interchangeable and re-

versible agitators of various kinds, each designed to produce an entirely different effect upon the product.

In addition to this they have special vacuum covers, vacuum pumps, condensers, and receivers, which permit experiments to be made under vacuum. The variable speed control, interchangeable and reversible agitators, and the vacuum equipment, all combine to make conditions ideal for laboratory work and for conducting experiments in a thorough and efficient manner.

An experienced chemical engineer is in charge, and the laboratory is available without cost to those in the rubber trade having sifting, mixing, kneading, and grinding problems to work out.



The Day Experimental Laboratory

EASTERN AND SOUTHERN

J. M. Huber, Inc., 460 West 34th St., New York, N. Y., manufacturer of blacks, colors, and clays, is celebrating its one hundred and fiftieth anniversary, having been founded in 1780.

H. F. Newell has been appointed general manager, distributing branches of the United States Rubber Co., with headquarters at 1790 Broadway, New York, N. Y. Mr. Newell has been with the U. S. Rubber Co. about a year and formerly was connected with the Viscaloid branch of E. I. Du Pont de Nemours & Co., Inc.

United Hospital Fund of New York, 151 Fifth Ave., New York, N. Y., has inaugurated a campaign to attain its \$1,000,000 goal in honor of a golden anniversary of service to the sick and poor of all New York. F. R. Henderson, president of the Rubber Exchange of New York, Inc., is chairman of the rubber auxiliary, which to date has contributed \$2,915 to the fund.

The Rubber Reclaimers Association met in New York, N. Y., on January 7 and reelected Clark W. Harrison, of the Bloomingdale Rubber Co., Bloomingdale, N. Y., president. William Welch, of the Akron Rubber Reclaiming Co., Akron, O., was chosen vice president, and L. J. Plumb, of the U. S. Rubber Reclaiming Co., Buffalo, N. Y., was chosen secretary and treasurer.

Boston Woven Hose & Rubber Co., Cambridge, Mass., according to Arthur C. Kingston, vice president and general manager, has announced that William V. Logan is now connected with the petroleum industries division of the company, located in the General Motors Building, New York, N. Y. Mr. Logan has been affiliated with the rubber industry for the past seventeen years, having been with The Goodyear Tire & Rubber Co. and the United States Rubber Co.

Mr. Logan will have associated with him Fred A. Mathey, prominent among Eastern rubber distributors and well known to the petroleum industry.

American Arbitration Association, 521 Fifth Ave., New York, N. Y., through Lucius R. Eastman, has announced the election of Paul W. Litchfield, president of The Goodyear Tire & Rubber Co., Akron, O., to its board of directors.

Mr. Eastman, in commenting on the participation of Mr. Litchfield, said: "The rubber industry has been one of the leaders in the extension of commercial arbitration, and it is our good fortune to have so prominent a representative as Mr. Litchfield closely identified with our work."

J. Entwisle, managing director of The Hertfordshire Rubber Co., Letchworth, Herts, and **H. G. Miles**, governing director of Empire Rubber Co., 25 Victoria St., London, S. W. 1, were recently in the United States on business. They will return to England early in February.

The United States Rubber Co., New York, N. Y., through F. B. Davis, Jr., chairman of the board and president, has announced that William deKrafft, for many years associated with the Baldwin Locomotive Works as vice president in charge of finance, on January 1 assumed the duties of chairman of the finance committee of the rubber company. For some time Mr. deKrafft has been a member of its board of directors. At a meeting of the board on January 7, Mr. deKrafft was elected also a member of the executive committee and vice president of the company.



Lindsay C. Moore

Appointment of Lindsay C. Moore, well known in Detroit tire and automotive circles, as district manager of United States tire sales at Buffalo, N. Y., was announced recently by L. M. Simpson, general sales manager of the tire department of the United States Rubber Co., Detroit, Mich. Mr. Moore, a native Detroit, spent the past year with the Buick Motor Co. in a marketing and sales research capacity, and prior to that was identified with the tire industry for ten years, five years having been spent as Detroit district manager for a tire manufacturer. In his new capacity at Buffalo, Mr. Moore will supervise tire department sales in parts of New York State and Pennsylvania.

Odell & Sons, crude rubber dealers, formerly at 66 Beaver St., New York, N. Y., are now located at Room 119, 25 Broad St., also in New York.

The Coverage Publishing Corp., publisher of *Tire and Auto Accessory Topics*, 250 W. 57th St., New York, N. Y., has announced that the publication has been purchased by John McAleenan, 575 Park Ave., also in New York. The present officers: Harvey Willson, president; Paul L. Palmerton, vice president; Peter P. Pinto, vice president and treasurer; and Earl D. Osborn, secretary, have resigned. Mr. Willson, though, will remain with the new organization as general manager, and Mr. McAleenan will be president of the new company to be incorporated.

A. Schrader's Sons, Inc., manufacturer of tire valves and gages, Brooklyn, N. Y. Its entire capital stock was acquired by the Scoville Mfg. Co., Waterbury, Conn., one of the largest brass concerns in the country. The price was not disclosed, but the Waterbury company intends to issue \$25,000,000 of 5½ per cent of debentures with which to finance the acquisition of the Brooklyn firm.

Charles R. Flint, who recently celebrated his eightieth birthday, expects to go back to Wall St. and actively resume business at the old stand, 25 Broad St., New York, N. Y., to form another merger. Mr. Flint was very well known in the rubber industry a quarter of a century ago, and participated in the organization of the Mechanical Rubber Co., Rubber Goods Mfg. Co., and the United States Rubber Co.

W. Van Lede, of Paris, France, sales agent of R. T. Vanderbilt products for France, Italy, and Belgium arrived in New York on January 21 on a business trip.

T. H. Hewlett, of the Anchor Chemical Co., Ltd., Manchester, England, is a recent visitor to the United States. His company is sales agent of R. T. Vanderbilt products for general British distribution.

The Schwarzwaelder Co., Philadelphia, Pa., since January 1, 1930, has been operating the cloth finishing business, while the Aldan Rubber Co. has conducted the rubberizing division. The change is in name only, for the management of the business remains the same as before.

F. G. Schenuit Rubber Co., Baltimore, Md., manufacturer of automobile tires, will soon award a contract for a \$100,000 rebuilding project for a manufacturing plant.

Tyler Resilient Tire & Tube Corp., Cumberland, Md., is contemplating a new \$100,000 plant for manufacturing a patented automobile tire. Sixty acres of land have been purchased.

The Goodyear Tire & Rubber Co., Gadsden, Ala., plant changed from a five-day to a six-day basis on January 2, according to announcement by C. C. Slusser, vice-president. Production will also be steadily increased, he said, from 4,000 tires to 7,500 per day by April 1. Four hundred men will be added to the payroll. Work of the reclaiming plant was increased from fifteen tons per day to twenty-five tons. Additional workers were employed.

The Firestone Tire & Rubber Co.'s tri-motored Ford plane landed at Miami, Fla., on January 16, after circling the Harvey Firestone estate at Miami, and the municipal airport. At the airport, Mrs. William M. McConnell, bride of the pilot, presented a bouquet of flowers and greetings from the Firestone company to City Manager Welton Snow and other Miami officials.

Dr. W. A. Gibbons Promoted

F. B. Davis, Jr., president of the United States Rubber Co., New York, N. Y., has announced the appointment of Dr. W. A. Gibbons, of Montclair, N. J., as director of the development department of the company. In his new post Dr. Gibbons assumes charge of all research work, a field in which



W. A. Gibbons

the company holds high rank in the rubber industry.

Dr. Gibbons is a rubber chemist of distinction who, subsequent to his university experiences, has engaged in rubber research in the General Laboratories of the United States Rubber Co., New York, since 1912, except during the War when he was a first lieutenant, later captain Ordnance Department, and Assistant Military Attaché American Embassy, London, England. He is author of several notable papers on chemical subjects and of a number of patents relating to vulcanization, applications of latex, rubber compounding, balloon and airplane fabrics, and construction of rubber articles. He was chairman of the New York Group, Rubber Division, A. C. S., in 1927-1928, and chairman, Committee on Physical Testing, Rubber Division, A. C. S.

International Exposition of American Import Trade

Plans have been definitely completed for the largest and most comprehensive annual exposition of foreign products ever assembled in this country. It will be known as the International Exposition of American Import Trade, staged in Grand Central Palace, New York, N. Y., August 4 to 9, 1930. Approximately 200,000 square feet of exhibition space will be available. The enterprise, devoted to finished, semi-finished, and raw products, will be similar to the great European trade and sample fairs, such as those held in Leipzig, Paris, and Milan.

Captain J. De Kahma-Kauffmann, general director of the exposition, is at present in Europe with headquarters at Paris, continuing the organization work abroad. United States head-

quarters is at 250 Park Ave., New York, and European headquarters at 7 Boulevard Haussmann, Paris, France.

One of the objects of the display is the reduction of expense and time involved in buying abroad from those sources outside of the large centers, such as Paris, London, Berlin, etc. Thousands of American concerns and shops doing a thriving business, who cannot afford to send buyers abroad on seasonal trips, will take advantage of the opportunity presented in August.

Reorganization of Minot, Hooper & Co.

A new partnership, effective since January 1, was formed by George Nichols and John Rousmaniere to transact the business of Minot, Hooper & Co., merchants in tire fabrics, sheetings, and drills, 11 Thomas St. and 82 Worth St., New York, N. Y. On the same day the firm became selling agents for the Merrimack Mfg. Co. The department handling the Merrimack line is under the direction of Mr. Rousmaniere, who personally managed the account when with Lawrence & Co.

The foreign business of the latter firm, which expired on December 31, will be conducted by the new partnership. It has taken over the export department of Lawrence & Co. intact. The personnel remains unchanged. Francis R. Masters is export manager, and B. L. Wood, who for many years has called on New York exporters, continues that work.

This export department will offer all the merchandise sold by the former firms of Minot, Hooper & Co. and Lawrence & Co., except the products of the New England Southern Mills and the Whittenton Mfg. Co. The export business in knit goods carried on under the Ipswich trade mark, will continue as formerly.

Temporarily, Minot, Hooper & Co. will use the name of Lawrence & Co. in their foreign business, and on direct business will trade under the name of Lawrence & Co., Export Department, Minot, Hooper & Co., successors.

When the new arrangements were made, the copartnership previously existing with Thomas W. Slocum, L. William and Clarence W. Horst, George Nichols, Robert W. Newell, George Linton, and John Bowen terminated by mutual consent. All except Thomas W. Slocum, who is retiring, will stay with the reorganized concern.

Minot, Hooper & Co. was founded in Boston, Mass., by Geo. R. Minot and Nathaniel Hooper in 1840.

Carbon Black Consumption

The Bureau of Mines, Washington, D. C., estimates that the consumption of carbon black by the rubber industry in 1925 was 86,329,000 pounds, or 65.2 per cent of the total production. In 1928 it was 140,930,000 pounds, or 70 per cent of the total production for that year.

Parks Joins United Carbon Co.

Charles R. Parks, well known in rubber research circles by his technical work on carbon black, has recently joined the staff of the United Carbon Co., 230 Park Ave., New York, N. Y. He was born at Tiffin, O., in 1894, graduated from Cornell University in 1916, taught inorganic chemistry at the



C. R. Parks

University of Minnesota for one year, and inorganic and physical chemistry at the Massachusetts Institute of Technology from 1917-23.

He entered the rubber manufacturing industry with The Goodyear Tire & Rubber Co., Akron, O., where during 1923 to 1926 he was engaged in general plant control and development work in compounding and compounding materials.

In 1926 he organized, at Los Angeles, Calif., a general chemical and rubber testing laboratory and assisted in the development of Goodwin carbon black. A portion of last year and that previous he was in charge of compounding research at the Goodyear Los Angeles plant.

In the past six years he has published a number of papers dealing with the structure and physical properties of rubber, accelerated aging tests, the effect of heat upon raw rubber, and the use of carbon black as a reinforcing agent for rubber. Certain of these papers were published with other research men in coauthorship.

Thus, Mr. Parks brings to his new connection a fund of scientific knowledge of the chemistry of rubber and experience in actual rubber compounding and research.

BLE Antioxidant

The latest general purpose antioxidant is known by the code letters BLE. It is a liquid product of the amine reaction type, insoluble in water and soluble in common organic solvents. Its specific gravity is 1.087. It is pronounced exceptional as an antioxidant, gives excellent results in both compounded and gum type stocks and, therefore, serves as an all around antioxidant except for pure white goods and those of delicate bright coloring.

New York Office for

United Carbon Co.

The United Carbon Co., Charleston, W. Va., manufacturer of Kosmos, Dixie, and Triangle brands of carbon black, has opened an office at 614 New York Central Building, 230 Park Ave., New York, N. Y., to serve as headquarters for its sales manager, William W. Higgins. To the rubber industry he is well known, having been with Binney & Smith and the Kosmos Carbon Co. for many years.

The United Carbon Co., which produces one-third of the world's carbon black, recently announced its new policy of selling direct to the trade instead of through sales agents. The New York office is but one step in its development scheme. Another is an expansion of its technical staff to handle the requirements of the rubber industry as well as to insure uniform grades of carbon black.

Other branch offices are located at 308 Akron Savings & Loan Building, Akron, O.; 844 Rush St., Chicago, Ill., and with its Pacific Coast representative, George H. Martin Co., 149 California St., San Francisco, Calif. Its subsidiaries include Kosmos Carbon Co., Crystal Carbon Co., United Producing Co., United Gas Co., Eastern Carbon Black Co., and Taylor-Green Gas Co.

Oscar Nelson, president of the parent company, in a statement to stockholders recently declared that the carbon black plants under construction in the Texas Panhandle district have been completed and are in full operation. Production, therefore, has materially increased, while decreasing production costs. Seasonal market conditions have curtailed shipments somewhat, but Mr. Nelson looks for improved conditions soon, resulting in increased shipments of accumulated stocks.

November Tire Statistics

Tire manufacturers in the United States produced a total of 3,603,436 pneumatic casings during November, according to estimates issued by The Rubber Manufacturers Association. Total production of inner tubes is estimated at 3,780,419, and total production of solid and cushion tires at 40,667 for the month.

Total shipments during November are estimated as follows: pneumatic casings, all classes, 3,557,759; inner tubes, 3,711,840; solid and cushion tires 32,927.

Inventories as of November 30 are estimated as 12,935,220 for all pneumatic casings; 13,701,324 for inner tubes, and 156,436 for solid and cushion tires.

The tire industry is estimated to have consumed a total of 41,581,104 pounds of crude rubber and 13,691,693 pounds of cotton fabric during November in the manufacture of pneumatic casings, inner tubes, and solid and cushion tires.

The association's estimates are based on reports furnished by manufacturers who produce approximately 75 per cent of the total for the United States.

MIDWEST

Thiokol Corp., 930 Wyandotte St., Kansas City, Mo., is the new name and address of the Industrial Testing Laboratory, formerly at 909 Wyandotte St.

Union Battery Co. of Del., Milwaukee, Wis., has purchased from the Cooper Corp., manufacturer of tires and batteries, Findlay and Madisonville, O., in bulk, the stock of merchandise and the fixtures pertaining to the battery end of its business for \$107,613.98, cash. The change was scheduled for Jan. 6.

Utility Manufacturing Co., Cudahy, Wis., has announced the following as its foreign representatives: Germany, Otto Krahn, Grimm 19, Hamburg; France, Cholet-Vanderhoef, Inc., 171 Madison Ave., New York, N. Y.; Italy, Ing. A. Polvara, Piermarini 4, Milan.

The Firestone Tire & Rubber Co., Akron, O., is to erect a one and two-story basement truck servicing plant for the A. M. O'Leary Co., Chicago, Ill., at 13th St. and South Western Ave. Plans are being drawn for the new building, construction of which will total \$150,000. The ground value is \$21,904.

The Goodyear Tire & Rubber Co., Akron, O., under a 15-year lease, has opened a new tire store in a four-story and basement building at 407-19 E. 25th St., Chicago, Ill. According to the announcement, the lessee will utilize the building as an office, warehouse, and service station. The structure represents an investment of \$600,000.

University of Michigan, Ann Arbor, Mich., has recently issued a new announcement of its courses in Chemical Engineering. The technology of rubber is treated directly in certain courses, and opportunity is offered in advanced courses for further specialization. For additional information write to Professor Alfred H. White.

The Bowen-Barker Co.'s master service station recently was opened in Kokomo, Ind., occupying 30,000 square feet of floor space with accommodations for 150 automobiles without crowding any of the service departments. Complete one-stop service all under roof is offered. The complete line of tires of the United States Rubber Co. is handled by the firm.

United States Rubber Co. Tire Department Activities

New Regional Sales Manager

The Tire Department of the United States Rubber Co., Detroit, Mich., announces the appointment of A. H. Massey as regional sales manager of the northwest district. He has been in

being outlined to its field officials and salesmen in a series of conferences arranged at central points. A study of general business conditions also is being made en route.

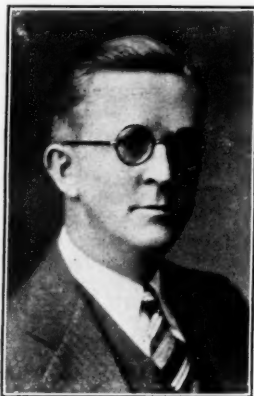
Commenting on the tire outlook, Mr. Simpson stated that most of the automobiles built last year, when the industry touched a new production peak, would require their second tires during the current motoring season.

"A new trend evident during the last year is the injection of style into tire design. This new development, destined to become an increasing factor in tire merchandising, will open up hitherto unsuspected outlets.

"This year will be the greatest in volume of unit tire sales in the history of the industry," Joseph F. O'Shaughnessy, assistant general manager, told all field representatives in the New England territory at a recent meeting at Cambridge.

H. E. Crocker, district manager who made plans for the two sessions held at the U. S. Tire branch, presided and introduced Mr. O'Shaughnessy and Mr. Simpson.

A. H. Lewis, of Kansas City, Mo., southwestern tire sales manager, with H. A. Holmes, Kansas City district manager, recently visited Wichita, Kan., as guests of Stanley Seig, manager of the Hockaday Auto Supply Co., United States tire distributor. The officials are visiting United States tire dealers and distributors in the southwest territory, surveying general conditions, and outlining plans for 1930. The outlook for United States tires in this territory is one of the brightest in the history of the company, Mr. Lewis told local press representatives.



A. H. Massey

the rubber industry for eighteen years, actively engaged in the sale of tires. For the past two and a half years he has been general sales manager of the Combination Rubber Co., Trenton, N. J. He recently resigned this position to join the new organization of United States Tires.

Tour of Sales Officials

L. M. Simpson, general sales manager of the Tire Department, and his staff are on a 10,000-mile tour, which will take them to all parts of the United States. Major moves to be undertaken by this rubber company are

PACIFIC COAST

Rubber goods trade on the Pacific Coast during the first month of the year was unusually mixed. Tire orders decreased considerably in the fore part of the month, and many dealers reported sales much below seasonal average. Most of the larger distributors found buyers much shyer than usual about taking on fair-sized invoices even though unusually easy terms were offered. Toward the middle of January dealers reported a change for the better, and toward the close of the month a healthy demand developed.

Distributors and retailers of footwear had a more cheerful tale to tell; business was exceptionally good since the first of the year. The rainy season was much behind time, but when it came, dealers in the Northwest and Southwest soon found their shelves bare. Many distributors found little difficulty in getting distressed retailers to sign large contracts for next season's needs much earlier than usual.

Repression in oil production, incident to a nation-wide conservation plan, which will probably obtain for a few months more, and a seasonal let down in the building trades account for a generally dull market for many types of mechanical rubber goods.

United States Rubber Co. in January devoted much time informing dealers about its new compensation plan which will shortly be in operation throughout the country. The plan was explained at dealers' conferences in all the larger cities on the Coast; the spokesmen for the company were L. M. Simpson, general manager of sales, tire department, and J. F. O'Shaughnessy, assistant to L. M. Tompkins, general manager, tire division, of Detroit, Mich. The plan is said to have met with a very favorable reception. J. B. Brady, general manager of the Pacific Coast Division, and J. B. Magee, general tire sales manager, both of San Francisco, Calif., recently made a general tour among the coast branches and report prospects very encouraging. Rubber flooring is reported as meeting with increasing favor. One of the largest contracts made on the Coast for several months has been closed by the U. S. Rubber Co. with the Shell Oil Co. for its new building in the San Francisco financial district.

Pacific Goodrich Rubber Co., Los Angeles, Calif., turned out its No. 2,000,000 tire on January 15, it being given the finishing touches by Vice President and General Manager Samuel B. Robertson. Inventory-taking was finished shortly before that date, and the works have since been operating full time. The outlook is said to be excellent for rapid stepping up of production. A recent visitor who spent much time at the factory was Taiji Komuro, managing director of the Yokohama Rubber Co., a subsidiary of The B. F. Goodrich Co., Akron, O. Executives who went during January

to Akron to attend conferences at the parent plant included General Sales Manager Frank E. Titus, Advertising Manager E. T. Morris, and E. W. Show, general manager of Goodrich Silvertown, Inc., the new retail division, which has thirty of its hundred stores located on the Coast. J. J. Flynn, formerly credit manager at the San Francisco Goodrich branch, has been made assistant to Treasurer Fred S. Morley at the Los Angeles factory.

Ever Ready Rubber Products Co., Twelfth and Howard Sts., San Francisco, Calif., reports sufficient orders ahead to keep the enlarged factory working to capacity for the next eight months. President M. E. Dorman, who recently acquired the remaining outstanding interest of the original concern, the C. Benedict Mfg. Co., left on January 18 for a business trip to Brooklyn, N. Y. The company makes an extensive assortment of rubberized goods, including aprons, sheetings, infants' wear, belts, skirts, caps, etc. Fabric-faced kitchen aprons are replacing the plain gum variety, one 1930 variety weighing 7 ounces as compared with the usual 13-ounce textile-rubber article. Rubber-faced working pajamas and dresses and washable rubber-interlined stockinet crib sheets are some other 1930 novelties.

Samson Tire & Rubber Corp., Los Angeles, Calif., reports business much better than is usual at the beginning of the year, and looks for a marked improvement in the spring. Several important sales outlets have recently been added in leading midwest and southern cities. The new factory on Telegraph Road is finished with the exception of the administration section. While the outside of the latter is fairly complete, much remains to be done on the inside. Meanwhile business is handled at the old executive offices at Eighth and Crocker Sts.

Goodyear Tire & Rubber Co. finished taking inventory early in January at its Los Angeles, Calif., factory, and resumed production with a daily average of 8,500 tires, working three shifts. Very encouraging spring prospects are reported: Manager of Sales Promotion J. X. Kennelly recently returned from the parent plant in Akron, O., where he had been conferring about an extensive sales campaign for the Coast in the early spring. The blimp "Volunteer," used for pilot training, experimental work, and advertising, has recently been refitted for longer range flying and severer aeronautical tests.

Kirkhill Rubber Co., 5811 S. Hoovey St., Los Angeles, Calif., found a noticeable improvement in business during the latter half of January. Most departments are now on a 24-hour basis. While the concern makes perhaps a wider variety of rubber staple goods and novelties than any other on the Coast, its main productions continue to

be heavy mechanicals, for the making of which it has lately installed much additional equipment. The company has just completed a 3-story, 80 by 120 brick-faced, reinforced concrete fire-proof Class A building, and provision has been made for two additional stories. T. Kirk Hill is secretary and general manager.

United Rubber Corp., 37 Arkansas St., San Francisco, Calif., has been doing very well during its first year, according to President Herbert King. During 1930 the concern will specialize in hard rubber goods, composition battery containers, tire repair materials, and miscellaneous molded goods. Special equipment was recently ordered for increasing the output of battery cases. The company has a five-year contract with a leading battery manufacturer to supply 1,000 containers a day, and a special effort is being made to bring production up to and beyond that point. Customers are said to include most of the larger battery makers on the Coast. Walton R. Smith, former sales manager of hard rubber goods for the Hood Rubber Co. in the coast area for the past six years, became vice president in January, and S. B. Sargeant, former vice president, is now secretary-treasurer. The three named comprise the board of directors and have become the sole owners, having purchased all outstanding shares.

Firestone Tire & Rubber Co. of California has another vice president and director, R. C. Tucker, general sales manager of the Firestone organization in the eleven far west states. His election was announced in January by President Harvey S. Firestone, Sr., of the parent company in Akron, O. Mr. Tucker, whose headquarters will continue at the Los Angeles, Calif., factory, joined the organization as a salesman eleven years ago at Birmingham, Ala., and soon establishing a reputation as an exceptional "go-getter," was appointed manager of the branch at Charlotte, N. C. Later he was made branch manager at Birmingham, Ala., where he remained until 1927 when he was appointed trade sales manager with control of over 30,000 Firestone dealers in the United States. Soon after the opening of the western Firestone factory he was selected for his present post. To his notable sales record he recently added another achievement, for his division captured the Firestone "World Series Pennant Race" with a substantial lead. The contest had covered the entire country.

The Willard Storage Battery Co.'s branch factory at Ninth and Gerhart Sts., Los Angeles, Calif., started production on January 20 with a schedule of 2,000 batteries a day, and 150 workers. At a luncheon in the works President J. C. Austin, of the Chamber of Commerce, introduced T. A. Willard, founder of the company, now living in Beverly Hills; C. H. Starr, vice president of the Willard company and general manager of the new factory;

Vice President S. W. Rolph, of the Willard company, Cleveland, O.; Mayor Porter; County Supervisor Beatty; and W. L. Brent; all of whom made brief speeches.

New Life to Rubber Co., Ltd., a California corporation, has been organized with \$100,000 capital. The president is Alfred Cushman, and secretary Richard D. Marshall, who, with Wm. T. Saffer, are also directors. Leo Freund, 509 Hill St. Building, Los Angeles, Calif., is attorney. The concern will operate in Los Angeles and make a compound which, it is stated, revitalizes and preserves rubber goods.

Python Brake Corp., Ltd., a Delaware corporation, has been organized to make brake lining in Los Angeles, Calif. It has a capital of \$400,000, and its officers are: President, Don Lincoln; secretary, Benj. S. Park; both of whom with Russell M. Lockwood are also directors. The attorney is Williams & Park, 215 W. Seventh St., Los Angeles.

J. K. Kantzer, Coast manager of sales for Diamond tires with headquarters in San Francisco, Calif., has been appointed by The B. F. Goodrich Co. to take care of all Brunswick tire sales also in the eleven far west states.

Lee Tire & Rubber Co., Conshohocken, Pa., held an annual sales conference last month at the Palace Hotel, San Francisco, Calif. Over fifty dealers attended. It was arranged by Pacific Division Sales Manager E. L. Van Buren, aided by San Francisco Branch Manager J. J. Pie. The chief talk was by General Advertising Manager Geo. H. Duck, who, in outlining a plan for a considerable sales expansion in the Coast area, showed marked gains in sales and dealer enrollment during 1929. Other Lee conventions will be held in February in northwest and southwest cities.

CANADA

Rubber footwear factories are very busy. The output of rubber tires shows a slight increase over the record of the previous month. Crude rubber prices currently are at a very low level, much too low to show a profit to producers and merchants. The consumer is the only one benefited by present conditions, according to authorities in the industry.

December 31 closed the booking season for dealers in garden rubber hose. Prices were announced in the fall, and, according to manufacturers, orders already received indicate slight carry-over stocks from last summer. Orders booked prior to the end of the year are protected against price increase during the spring months, and any decline will be made effective on these orders. At present no change in garden hose prices is considered, but the movement of crude rubber and cotton will regulate this market in coming months.

One of the greatest recent problems of the retail trade in larger cities is ladies' overshoes. Since color and style are conspicuous features, a retailer is at a loss when ordering. Another difficulty encountered is the offering of large quantities of goods left over from last winter, when the weather did not occasion a normal use of such footwear, with the result that wholesale dealers had to carry over a large volume of stock. These left-overs, put on the market in the late fall at clearance prices, flooded the retail market with goods, which, while not up-to-date in style, by virtue of low price had competed successfully with the new season's goods. Retailers, looking for an opportunity to move their new overshoe stock in certain sections of the country, have therefore been disappointed.

The sales of rubber goods usually forms a good part of the December business. Last year, however, in some provinces, low-priced left-over stocks cut competition. On the other hand, a compensating factor is

that the weather has favored the sale of rubber goods. This should result in better trade with little surplus stock.

The velvet galosh, derived from the carriage boot, is the sensation of the rubber footwear season in Montreal. It is selling freely in brown, black, and gray, with brown predominating. The manager of a shoe department in one of Montreal's leading stores reported that in one day they sold over 1,600 pairs of velvet galoshes, and were conducting a clearance sale at reduced prices to get rid of several old styles of overshoes. The lightness of the velvet galosh combined with its warmth and style appeal accounts for the heavy sales volume.

Goodyear Tire & Rubber Co. of Canada, Ltd., New Toronto, Ont., reports good progress in developing a larger output than has been evidenced even in past years of good consumption. Production has been increased by 1,000 tires a day, and the company anticipates further increase this month of 1,500 tires daily. The domestic business for the first quarter of its present fiscal year has been greater than in the same period last year. Foreign business has not been up to the former level because the management was reducing stocks to a minimum. During the present year it is anticipated exports will be materially increased. The work, begun at the Bowmanville, Ont., plant last summer, was completed early last month, and extensive operations are under way. It is expected that the plant will be run at full capacity indefinitely.

The Goodyear Cotton Co., Ltd., has completed the addition to its buildings at St. Hyacinthe, P. Q., but will not have the entire plant in commission before March 1. When the new machinery, about to be installed, is in use, the enlarged establishment, it is claimed, will compare most favorably with any organization of its kind on the continent. The addition will slightly more than double the capacity of the plant.

John W. Dobbin, St. John, N. B., representative of the Dunlop Tire & Rubber Goods Co., Ltd., in western Nova Scotia, was recently elected president of the Maritime Commercial Travelers' Association. He has already held various executive offices.

S. G. Amero, of the Kaufman Rubber Co., Ltd., Kitchener, Ont., addressed the annual convention of the National Shoe Retailers in the Royal York Hotel, Toronto, Ont., on "Impersonations."

Quebec Shoe & Rubber Co., Ltd., Quebec, P. Q., recently assigned, has offered a compromise of 50 per cent cash.

Dominion Rubber Co., Ltd., Montreal, P. Q. Its staff held a banquet recently in the main dining room of one of Montreal's leading hotels. A male chorus consisting of the 75 guests sang Canadian and English folk songs.

W. A. Eden, president of the company, recently contributed a specially written article on the Canadian rubber industry in the Commercial and Financial Supplement of the Year 1929 of the *Montreal Gazette*, in which it was shown that the rubber industry ranks eighth in Canada.

Dividends Declared

Company	Stock	Rate	Payable	Stock of Record
Firestone Tire & Rubber Co.	6% Pfd.	\$1.50 q.	Mar. 1	Feb. 15
General Tire & Rubber Co.	Com.	\$1.00 q.	Feb. 1	Jan. 20
Stedman Products Co.	Pfd.	\$1.75 q.	Jan. 2	Dec. 26
Thermoid Company	Com.	\$0.50 q.	Feb. 1	Jan. 20
Thermoid Company	Pfd.	\$1.75 q.	Feb. 1	Jan. 20

Rubber Stock Sales—1929

Stock	High	Range Date	Low	for Year 1929	Date	Last	Net Change	Year's Sales
Ajax Rubber	11 1/4	Jan. 23	1	Dec. 27	1 1/4	— 9		755,000
Firestone T. & R. 1.60	37	Dec. 5	24 1/4	Dec. 30	26 1/2	— 10 1/2		26,100
Firestone T. & R. pfd. 6	89 1/2	Dec. 9	83 1/2	Dec. 20	86 1/2	— 10 1/2		26,350
Fisk Rubber	20 1/2	Jan. 23	2 1/2	Dec. 30	3 1/4	— 13 1/4		1,954,600
Fisk Rubber 1st pfd.	72 1/2	Jan. 14	8	Dec. 31	13	— 54		67,702
Fisk Rubber 1st pfd. cv.	82 1/2	Jan. 25	8	Dec. 30	10	— 61		30,820
Goodrich, B. F. 4	105 3/4	Jan. 2	38 1/4	Dec. 23	42	— 61 1/2		1,767,700
Goodrich, B. F. pfd. 7	115 1/4	Feb. 25	95 1/2	Dec. 30	95 1/2	— 18 1/2		28,500
Goodyear Tire & Rubber 5	154 1/4	Mar. 18	60	Oct. 29	61 1/2	— 72 1/2		3,891,950
Goodyear T. & R. 1st pfd. 7	104 1/4	Feb. 28	87	Nov. 14	92 1/2	— 10 1/2		94,800
Intercontinental Rubber	14 1/4	Jan. 11	2	Nov. 13	4 1/4	— 7 1/2		281,400
Kelly-Springfield Tire	24	Jan. 15	3 1/2	Dec. 30	3 1/4	— 20 1/4		1,463,700
Kelly-Springfield Tire 6% pfd.	160	Jan. 14	26	Dec. 30	26	— 73		10,150
Kelly-Springfield Tire 8% pfd.	94 1/4	Jan. 7	16	Dec. 26	18	— 73 1/2		17,150
Lee Rubber & Tire	25	Jan. 14	5	Oct. 29	6	— 17 1/2		288,900
Miller Rubber	28 1/4	Mar. 20	3 1/4	Dec. 6	4	— 19		143,200
Norwalk Tire & Rubber	6 1/4	Feb. 4	3/4	Oct. 21	1	— 4 3/4		80,100
Norwalk Tire & Rubber pfd.	45	Jan. 31	8	Dec. 11	9	— 31 1/4		1,480
Raybestos Man. 2.60	58 1/4	Sept. 19	28	Nov. 13	32 1/2	— 10 1/2		286,600
U. S. Rubber	65	Mar. 18	15	Oct. 29	24	— 22 3/4		4,169,900
U. S. Rubber 1st pfd.	92 1/4	Jan. 16	40 1/4	Nov. 14	46 3/4	— 46 1/4		368,000

The Rubber Industry in Europe

GREAT BRITAIN

Rubber Consumption

The world consumption of crude rubber during 1930 may reach 850,000 tons, according to a forecast of Charles Hope & Son. Present conditions in America make any estimate of consumption in the United States for 1930 rather difficult, but the firm in question suggests an average of 36,000 tons a month or 432,000 tons for the year. The prospects of consumption in the rest of the world are considered much more favorable. In 1927 the rest of the world consumed about 212,000 tons of rubber; 239,000 tons in 1928; and for 1929 the figure probably was about 335,000 tons. While the use of cars for pleasure and business may have reached the saturation point in the United States, over the rest of the world there is considerable scope for a very large increase in motor transport. The average rate of increase in consumption is therefore expected to be maintained during the current year. On the basis of the rate of increase since 1926, the increase during 1930 is expected to be about 25 per cent as compared with 1929, that is about 418,000 tons. It is to be noted that the rest of the world is expected to take very nearly half of the estimated consumption for 1930.

Rubber in Airship R. 101

Rubber does not enter very largely into the construction of R. 101, says *India Rubber Journal*. The gasbags are lined with goldbeater's skin, which is attached to the cotton fabric by a special glue. Rubber has been used for this purpose, but it must be made stable in tropical heat before it can compete with the special glue. In minor ways rubber fabric is used for the various filling and emptying sleeves on the gasbags and for the petticoats which connect the bags to the safety valves, two-ply fabric being used. The bags which hold emergency water ballast in $\frac{1}{4}$ - and $\frac{1}{2}$ -ton units are of 3-ply rubbered fabric. A single-ply rubbered fabric is used as the inner layer to certain parts of the outer cover which are inflated by air scooped in flight to keep the cover from unduly flapping. The specifications of these are variations of the B. E. S. A. Specification F41. A total of 2,000 to 3,000 yards of all kinds probably covers these requirements.

British-Goodrich Rubber Co.

The fifth annual general meeting of the British-Goodrich Rubber Co., Ltd., was held recently at Manchester, with Sir Walrond Sinclair, chairman and managing director, presiding. In his report he stated that during the past year there had been a

continued and progressive increase in the sales volume not only of tires, "where substantial improvement has been achieved in face of probably the most intensive competition that has hitherto ever been experienced in the industry, but also in respect of continuous expansion in general turnover, which is reflected throughout the whole of the various departments."

The net profit for the year amounted to £92,969, 10 shillings, 3 pence, as compared with £73,235, 7 shillings, 2 pence for the previous year. Since provision for income tax has been increased by nearly £30,000, the net profit actually earned in the period under review was £125,969, 10 shillings, 3 pence. The preferred dividend amounting to £15,000 has been duly paid and £21,443, 18 shillings, 1 pence has been set aside to the preferred shareholders' reserve account. The directors recommend £35,000 standing on preliminary and formation expense account be completely written off, and after distributing a dividend of 4 per cent to the common shareholders, the sum of £10,461, 7 shillings, 11 pence will be carried forward. The B. F. Goodrich Co. has volunteered to forego the whole sum of £14,843, 15 shillings which it was entitled by the articles of the company to receive out of profits of the company before any distribution was made to the common shareholders.

Raincoat Styles

What started out as a very poor year for the raincoat trade with money rather tight and adverse weather conditions, brightened up wonderfully during the last few months. During the wet and dull days several attractive new ideas in raincoat styles were noticed on the streets. Thus, there seems to be a vogue for finishing the edges of pockets, cuffs, and collars with pipings in shades contrasting with the raincoat itself, white pipings on black silk being the favored combination. The very latest raincoat fashion whim, however, is inspired by the London policeman's oilskin uniform and is carried out in black with white collar and cuffs, producing a very smart effect. The well-dressed woman completes her rainy day outfit with a pair of colored Wellingtons matching her coat.

Workers' Wages

The average earnings of a male worker in the rubber industry during the week ended October 27, 1928, was 57 shillings 8 pence against 56 shillings 11 pence in the week ending October 18, 1924, an average increase of 1.3 per cent. Female workers, however, earned 28 shillings 3 pence against 29 shillings 1 pence respectively during the same periods, a decrease of 2.9 per cent.

These figures have been published in a return issued by the Ministry of Labor and are based on information supplied by firms employing 30,884 workers.

Institution of the Rubber Industry

The annual meeting of the Birmingham and Midland Section was held in Birmingham on December 11, 1929. The following were elected for the forthcoming year: Chairman, D. F. Twiss; Vice Chairman, T. Brown; Hon. Secretary, C. D. Law. The members of the committee selected were: S. G. Ball, F. Fellowes, J. Hall, A. Healey, F. B. Jones, Colin Macbeth, E. A. Murphy, B. B. J. O'Donnell, I. P. Patterson, C. H. Saunders, F. Thomas, Dr. Menghi. It was decided to adopt the title Midland Section instead of Birmingham and Midland Section.

The eighth annual general meeting of the Institution will be held on February 26, 1930. The meeting will be followed by a popular dinner in honor of the new president, Eric Macfadyen, a director of Harrisons & Crosfield and ex-chairman of the Rubber Growers' Association. The retiring president, The Right Hon. Lord Colwyn, P. C., LL.D., and many other leaders of the industry have promised to attend.

The Knock-Kneed Tire

The K. K. (knock-kneed) tire has been specially designed by Roadless Traction, Ltd., Hounslow, Middlesex, for use on soft surfaces. This is a low pressure tire offering to the ground surface a flat or even slightly concave area of contact. The walls are completely protected from damage or puncture, and the tread is stiffly reinforced with layers of canvas. The tire is designed for a normal running pressure of 10 pounds per square inch. The length of the ground contact of the deflated tire is $10\frac{1}{2}$ inches and in that of the inflated tire, $7\frac{1}{4}$ inches. The new tire is not yet definitely on the market for, although good results are reported, some difficulties still must be cleared up.

Query from Dr. Schidrowitz

"I wonder whether any of the larger factories in Europe and America have statistical data regarding the relative variability of plantation and planted (native) rubber?" queries Dr. Schidrowitz in a recent issue of the *India Rubber Journal*, in discussing native rubber. He suggests that the renewed outbreak of variability complaints may to a large extent be due to the greater variability in native rubber, which, owing to greatly increased output, is coming on the market in greater volume than ever before.

GERMANY

Rubber Flooring Problems

Referring to an earlier article on the trade in rubber floor coverings, a writer in a recent issue of the *Gummi-Zeitung* points out the problems this trade has to meet, especially in connection with the laying of the flooring. In his experience over a number of years he repeatedly found that rubber coverings frequently do not keep or adhere well on concrete floors. The reason for this he found was that the cement used for the floors to be covered with rubber contains alkaline combinations as caustic alkali and more especially caustic soda, which may have formed during the process of burning the cement when coal containing alkali salts may have been used. Such cements always give off aqueous alkaline solutions when they become damp. No great harm is done if the cement is so situated that the moisture which has absorbed the alkalis can escape, thus freeing the concrete of the harmful chemical. But if the concrete is so placed that ventilation or evaporation below is impossible, then the rubber cover is in danger.

The Tire Industry

Official production statistics for the German tire industry during 1928 show 23 factories of which 12 are in Prussian Territory, 4 in the Free State Hessen, 2 each in Baden and Thuringia, and 1 each in Bavaria, Waldeck, and Hamburg. On January 1, 9,595 persons were employed in these factories; on April 1, 10,371; July 1, 8,977; and October 1, 9,013. This is a decrease as compared with the previous year when 10,700 persons found employment on April 1, while on July 1, the number was 11,900 against the 8,977 of 1928. The total amount paid in wages was 19,081,000 marks for 20,106,073 working hours.

While the value of the materials used in the manufacture of tires was 105,312,000 marks, or 11 per cent less than in 1927, considerably more material was actually consumed. The average value of a ton of raw rubber in 1928 was 2,600 marks, as compared with 3,700 marks in 1927 and 5,100 marks in 1926. Reclaim represented an average value of 800 marks per ton against 1,000 marks in 1927. The value of the materials used represented 51.5 per cent of the value of the output as compared with 57.4 per cent in the preceding year. Almost half of the total went for raw rubber, 31 per cent for fabrics, 13 per cent for chemicals and similar materials; while reclaim accounted for only 3 per cent.

The output had a total value of 204,400,000 marks against 205,600,000 the year before. During 1928 an increase was noted in the production of most types of tires for motor vehicles, but the output of cycle tires decreased markedly. Adverse conditions in the cycle industry caused a decrease in tire covers amounting to 30 per cent, of tubes amounting to 18 per cent, and of tube-tires amounting to 40 per cent as compared with figures for 1927.

On the other hand pneumatic tires for

private cars and delivery trucks showed a 15 per cent increase. The prohibition of the use of solid tires led to an enormous increase in the manufacture of giant pneumatics and resilient tires. In the case of the former the increase in the number of tire covers produced was 71 per cent, while more than twice the amount of inner tubes were made.

A marked preference for motorcycles for sport and transportation resulted in an increase in production of covers amounting to 72 per cent and of tubes amounting to 84 per cent when compared with the 1927 output.

The total value of tire sales was 15,000,000 higher than in 1927. Exports showed a slight increase, 9.5 per cent against 8.6 per cent in the preceding year. In spite of this, foreign markets continue in general to be closed to German tires; while foreign tires apparently find the German duties offer very little difficulty.

The quantities of the various types of tires produced, and the sales at home and abroad are shown in the following table:

	Pro- duction	Sales	
		For Home Con- sumption	For Export
Pneumatic Tires for Private Cars and Trucks			
Covers	1,361,938	1,255,935	153,346
Tubes	1,303,641	1,145,149	159,792
Tires for Trucks and Omnibuses			
Giant Pneumatics			
Covers	128,481	107,371	24,377
Tubes	120,213	90,661	23,443
Hollow Tires with Steel Rims	153,549	146,743	6,467
Solid tires	41,353	47,171	7,782
Tires for Heavy Trucks and Tractors			
Pneumatic Tires			
Covers	1,606	1,448*	.....
Tubes	1,767	1,469*	.....
Solid tires	44,788	46,679*	.....
Motorcycle Tires			
Covers	762,708	721,997	22,375
Tubes	805,904	780,837	25,596
Bicycle Tires			
Covers	11,576,711	11,601,527	1,058,453
Tubes	11,910,746	9,346,544	2,968,484
Tube-Tires ..	171,728	180,961	8,859
Other Tires	6,295	6,368*	.....
Total Value			Marks
Output			204,378,000
Sales			215,828,000
Sales			
Home Consumers			195,423,000
Export			20,405,000

*Total sales, including both home consumption and export.

The Barcelona Exhibition

The International Exposition at Barcelona, Spain, could hardly be termed representative of the industry as there were, besides a fair number of French and Spanish exhibitors, only two English firms and one Italian firm, Pirelli, which excelled all others. It had a fine pavilion and exhibited everything produced by the firm, including 132,000-volt cable.

In the rubber section were exhibits of the North British Rubber Co. and of the Beldam concern, besides the following French firms: Schoenfeld Frères; Maurel Frères & Cie.; Etablissements Gabriel Wattelez; Etablissements Palladium; Compagnie de Caoutchouc Manufacture "Dynamic"; Persan; Fernand Gratioux; Société Industrielle du Régénéré de la Courneuve; Berjonneau-Jacquau & Cie.; Kalker; H. et G. de Poix et Cie.; Etablissements Arthur Gobert; Etablissements

Repiquet, Matériel Special; and Michelin.

The Spanish rubber firms were: Blasi, Sagué & Pallas, Barcelona, which showed tubes, hose, surgical goods, sporting goods, ebonite; Sobrina de R. Garriga Escarpenter, Barcelona, surgical goods, hose, ebonite, orthopedic articles; F. Capella Dalmau, Barcelona, dipped goods; Jose Riba Granollers, Barcelona, mats for automobiles, sheets, hose; Hijos de Jose Gasso y Marti S. en C., Barcelona, rubber and asbestos goods; T. Lapeyra, Barcelona, anti-puncture devices; and Las Fabricas Reunidas de Caucho y Apositos, Barcelona, Bilbao, Madrid, Seville, druggists' sundries, belts, soles, heels, and toys.

In the Belgian Pavillion, O. Englebert Fils et Cie. showed tires, and the Société Anonyme pour le Commerce et l'Industrie du Caoutchouc, Brussels, had samples of their products, including dipped goods.

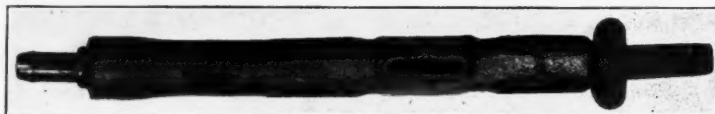
Latex Radium Applicator

The accompanying illustration shows a cleverly made applicator for the relief of sufferers from Carcinoma of the rectum which up to the present time has not been treated successfully by the radiation of radium elements. This has been developed by Ira I. Kaplan, B. S., M. D., Att. Radiation Therapist, Bellevue Hospital, Assistant Director, Radiology Department of Hospitals, New York, N. Y.

The applicator is hollow to allow for drainage, and the body of the applicator is fenestrated at equal distances with cavities

to hold from one to nine platinum containers, each one being 23 mm. long and four mm. in diameter, and holding, when fully loaded, about \$12,000 worth of radium elements.

This permits the treatment to be given to any desired part, and after loading, the outside sleeve is rolled down holding the elements in position. The entire article is made of rubber latex and must be free of all mineral matter as any degree of mineral matter affects the radiation and causes the patient discomfort.



Radium Applicator Made of Rubber Latex

The Rubber Industry in the Far East

NETHERLANDS EAST INDIES

Hevea Production Factors

At a general meeting of the Coffee and Rubber Circle, Besoeki, held in the Besoeki Experiment Station, Dr. J. Schweizer, spoke interestingly of the factors influencing Hevea production. He showed how the root, leaf canopy, and renewed bark influence latex flow, and how these should be in the best physiological condition to insure maximum yield.

Experiments showed that the root bast plays an important part in the renewed formation of latex after tapping, the influence being more marked the closer the tapping cut is to the root collar. The latex which flows from the tapping cut low down on the tree trunk is largely derived from the root bast, so that the Hevea roots may be regarded as the latex-forming reservoir.

Because of the part that the leaves play in connection with osmosis, the leaf canopy is a very important factor in the regeneration and flow of latex. To test this, certain trees were stripped of leaves at a time between two wintering periods; this was in November, 1926. Yields dropped immediately, reaching their peak again in the beginning of March, 1927. In the meantime the loss of output was 23 per cent, calculated on the total output between the two wintering periods. The loss in output varied from 11 to 34 per cent in individual trees.

In another case, a tree was stripped of leaves shortly before the wintering period, and its periodicity was greatly disturbed. Whereas in the former experiments, the maximum production was resumed some months after denudation, and while the tree was still bare of leaves, the tree under discussion reacted quite differently. There was no resumption of this maximum output and at a time when it usually is bare of leaves, it suddenly showed young, dark green leaves which soon after began to discolor and drop off.

On another occasion half of the foliage of a tree was removed. This resulted in a gradual decline of output and, as in the previous instance, there was again no increase to peak output, but instead the decline continued. The total loss in output was 34 per cent. This showed that partial removal of the foliage had the same if not a more serious effect on the output as complete denudation.

The leaves also affect the suction power of the cells surrounding the latex vessels, so that the higher the suction, the lower the latex flow. The suction power varies in individual Heveas and its intensity may be hereditary, as suction power is hereditary in other plants, and use of this fact has been successfully made in selection.

Dr. Schweizer considers it an attractive idea to connect the flow of latex with the suction power in Heveas and suggests that selection of young Hevea seedlings might be facilitated in this way.

Bark Renewal

The anatomical structure of tapped bark differs from virgin bark, and the flow of latex should also show a difference. However, it was found that the first renewed bark gives a considerably higher output than much older virgin bark at the same height. Oddly enough, renewed bark high on the tapping panel gave more than twice as much latex as virgin bark tapped at a similar height. In the center of the panel, the difference is one-third in favor of renewed bark, and on the lower part of the panel, about one-fifth in favor of the renewed bark. Dr. Schweizer, therefore, offers the suggestion that it would pay to start tapping immediately at the top of the panel in order to benefit by the doubled output from the renewed bark as soon as the first panel was tapped again.

An interesting fact is that trees which produce very little when first tapped prove to be really good producers when the renewed bark is tapped. This point is important when thinning out and testing clones. In the former case, thinning out should only be undertaken after yields on renewed bark are available. In the case of clones, too, no definite opinion regarding their value should be formed until yields for at least one renewed panel have been obtained. It is a fact that some clones are at first poor producers but later give higher yields than clones which gave high outputs from the start, whereas the latter type frequently deteriorates as far as production is concerned. Therefore, it is a good idea to plant clones of these two types in combination. Those belonging to the type that start out by being excellent yielders but later on fall behind could be tapped at an early age with a very heavy tapping system until they were literally tapped to death. In the meantime, those that reached the peak of production at a later period would have attained the desirable tapping age, and the unnecessary loss of output could be avoided.

Soekaboemi Planters

At a meeting of The Soekaboemi and Rubber Planters Association in Buitenzorg a number of subjects of interest were discussed. The question of how to tap bad producers to death was answered by Professor de Vries, who said that was difficult to answer as so much depended upon conditions of the individual estates. Mr.

Nieuwpoort's method was to use longer tapping cuts than usual and to put the bad tappers on this job. When the trees were exhausted, the bad tappers were thrown out with the bad trees. Mr. Van Leeuwen thought it dangerous to tap trees, that were to be taken out, so deeply that the wood was reached. Coolies got to doing this and then used the same method on good trees. On his estate, when old trees were going to be cleared out, each tree received four cuts over half the circumference. The output obtained in four months equaled that otherwise obtained in two years.

A question was asked, whether, in the case of buddings from descendants of mother trees it should not be made a rule to demand that the pedigree should be mentioned. Otherwise, there might be danger of degeneration, as was found in the case of sugar. One of those present answered that it was not correct to compare sugar and Hevea. But he knew that a certain pear, which was already a few hundred years old and had been constantly budded, had only recently begun to deteriorate. He therefore thought there was no danger, for some time at least, that budded Hevea would show signs of deterioration.

Rubber Yields

In 1927 questionnaires were sent to all rubber estates in Java and South Sumatra affiliated with the Algemeen Landbouw Syndicaat (General Agricultural Syndicate) requiring data regarding crop and plantation in that year. The information was supplied by 275 estates, representing two-thirds of the total area for which data had been requested. The information thus obtained has been worked up into a series of articles to appear under the title "Results of Rubber Statistics for 1927." The contents of this series will be: 1. Rubber production in relation to the age of the plantations. 2. Relation between planting distances and outputs. 3. Relations between thinning out and yields. 4. Age at which rubber plantations are tapped. 5. Rubber production of mixed plantations. 6. Yields from gardens planted with seed from mother trees.

The material available for the calculation of the average outputs per hectare at various ages represented an acreage of 65,000 hectares and 1,300 plantations.

The average production from the youngest gardens, 5 to 6 years old, was 223 kilos of rubber per hectare. The older the gardens, the higher the outputs, up to the age of 15 to 16 years. The difference in yield is greatest in the youngest plantations and gradually decreases in the older plantations. In 1927, the highest yields,

467 kilos per hectare, were obtained from the 15- to 16-year-old gardens. Above that age there was a decline in outputs from year to year which, according to the "ideal line," amounted to 2 to 3 per cent.

Yields of less than 200 kilos per hectare occurred exclusively in gardens of less than 10 years of age. On the other hand, various mature areas were to be found in the class of those yielding 201-300 kilos per hectare. The majority of the gardens yield between 301 and 500 kilos per hectare; more than half of all the plantations come under these two classes. Very many gardens give between 501 and 600 kilos per hectare, and there were cases where these yields were obtained on very young areas. The output of 601

to 700 kilos per hectare was obtained on a fairly large number of plantations; on the other hand, outputs of more than 700 kilos per hectare were exceptional.

The above figures indicate that the maximum outputs are between the 15th and 16th year; while outputs decline steadily after this. Some years ago it was shown that the peak was reached at the 12th year; an improvement has therefore taken place in the meantime and it is by no means to be assumed that the turning point now is definitely 15 to 16 years. It is quite possible that the decline in production after that age is due to early tapping systems which were heavier than now, resulting in a shorter period being allowed for bark renewal than is now the case.

obtained was 628,100 pounds, or a yield of 766 pounds per acre for the area tapped and an average of 510 pounds for the whole mature area.

These figures are compared with figures for 1927. During that year the whole area has been tapped for ten months, while for the last two months 40 per cent of the area was rested. The actual yield for ten months obtained was 628,000 pounds and if to this is added the amount that would have been obtained from 100 per cent tapping during the last two months, the crop would have been 660,000 pounds of dry rubber. This works out at 537 pounds per acre over 1,230 acres, or only 27 pounds per acre more than was produced the following year on two-thirds the area.

The benefits claimed for the system are: (1) Economy in labor, only 66 per cent of the tapping force being required as compared with alternate day continuous tapping; (2) Increase in yields per coolie and hence lower tapping costs; (3) Tapping can be started at a lower height; (4) Concentration of supervision.

The f. o. b. and tapping costs work out as follows:

	Jan.- Dec., 1927 Lbs.	July, 1928- June, 1929 Lbs.	Jan.- July, 1929 Lbs.
Crop	628,000	628,100	383,000
F. O. B.	Cts. Per Lb. 28.60	Cts. Per Lb. 16.97	Cts. Per Lb. 17.05
Tapping	6.20	4.85	4.70

Bark renewal seems to benefit by the six months' rest. With all its advantages the system, of course, has this drawback that during the first year when only 66 per cent of the area is tapped without any advantage from rest, there must be a loss. The effect of the rest will only begin to be felt after the first area rested is taken into tapping again.

Saving Latex

In one way or another rain causes a loss of about 10 per cent in the crop of Malaya. Tapping cannot be started until the bark is dry, so that coolies have to start tapping later than usual, and it is a well-known fact that more rubber is obtained by tapping early in the morning than later on. Wet bark below the panel attracts latex from the tapping cut and so latex is lost. Sir Malcolm Watson, M.D., LL.D., has invented a tapping process and a "Compo" which it is claimed solves these problems.

The compo is a solid, oily substance, which softens when heated. In applying it, the panel to be tapped is lightly scraped for about 6 inches below the cut and then painted with previously melted compo. This application will do for eight months, and prevents the latex from running over the cut in rainy weather.

To prevent water flowing down the stem of the tree on to the tapping cut after the rain has stopped, one or two cuts are made the full width of the upper part of the panel and above it, in the shape of an inverted V, to the lower edge of which compo is applied. These cuts should be scraped two days after the compo has been applied when they are efficient for eight months. In a full scale experiment it was shown that the method saved 17 per cent of the crop on wet days.

MALAYA

Rubber Schemes

The Rubber Growers' Association Scheme for cooperative group selling has called forth little enthusiasm here. The *Malayan Tin and Rubber Journal* suggests that this is due to the tendency of the rubber industry to wrangle over the details of any scheme presented, and that at present it looks as though nobody will take the trouble to approach the subject with an open mind. It would seem that the average rubber man here is more interested in salvation schemes devised by his own self than in those proceeding from any other source, and, that being the case, very little support for any scheme may be expected even from those who believe that voluntary or legalized schemes of regulating the rubber industry have a chance of succeeding. The others do not want the rubber industry to be meddled with in any way; they are prepared to see the weaker brethren, and particularly the Asiatics, fail, and then to go ahead and supply the world's need at comfortably remunerative prices, and are therefore quite ready to stand alone.

Looking over the salvation schemes published in the local press, one finds that they fall roughly into two types: those that want to restrict output by introducing a law forbidding Sunday tapping or one forbidding tapping during the wintering months; and those who want to produce all but would like to regulate prices.

It has been claimed that by prohibiting Sunday tapping a reduction in crop amounting to about 14 per cent would follow and that it would not be difficult to catch violators. Against this it is suggested that those who are carrying out some scheme of periodic tapping could easily plan so that while they would cut out tapping on Sunday, their number of days on which tapping was carried out would not be decreased. Also it is feared that the free day would have a demoralizing effect on the coolies and would interfere with their efficiency to say nothing of the fact that they would strongly object if they were not going to be paid for Sunday anyway. A final objection is that a six- or even five-day week might cause

some reduction in output at first, but this difference would soon be evened up. Of course, the effect of stopping tapping entirely for two months or so during the wintering period would be that the output after the rest would increase so that the year's crop would not be much less than that obtained at first. However, here we would have to consider the immediate effect on the market of complete tapping cessation for a fairly prolonged period.

In the meantime, while some are formulating schemes and others are preaching the survival of the fittest, the wise producer is saying nothing but is going ahead with his selection, tapping, and other experiments, knowing that an enterprising planter may sooner expect to find ways of producing at a profit, than to hit upon a scheme that will send rubber soaring.

A. B. C. Rotational

Tapping System

In the December issue of *The Planter*, G. W. Temple publishes some interesting notes regarding A B C rotational tapping system.

The mature area of the estate where this system was carried out is 1,230 acres, and consists of two divisions of 180 and 1,050 acres about 4 miles apart. The two divisions were treated as separate entities and each was divided into three nearly equal portions, so that there were then Sections A, B, and C of Division I, each about 60 acres; and Sections A, 338.2 acres, B, 349 acres, and C, 360 acres, of Division II.

Beginning July 1, 1928, Section A and B of both divisions were tapped for six months while Sections C were rested for six months. On December 31 tapping of Section A was stopped for six months and Section C brought in again. By June 30, 1929, a complete year's crop figures on the A B C system were available, that is over the period July 1, 1928-June 30, 1929. During this period Section A had been tapped for six months, Section C for six months, and Section B for the entire period, the average area in tapping being 819.7 acres for the year. The crop

Rubber Patents, Trade Marks and Designs

Machinery

United States

1,736,911.* **ROLL COVERING.** An improved method and apparatus being particularly suitable for covering with rubber the large rolls used in paper-making. The method consists in applying a strip of rubber compound helically around the cylindrical roll. C. H. Gray, London, England.

1,737,111.* **MARKING RUBBER.** This covers a method and means for placing marking or guiding lines on strips of rubber formed for ornamental or useful purposes. The marking is effected by the application of either a colored rubber cement or latex. C. H. Desautels, Springfield, assignor to Fisk Rubber Co., Chicopee Falls, both in Mass.

1,737,127.* **WEB-HANDLING DEVICE.** This invention meets all the requirements and conditions imposed in handling cut rubberized materials, and at the same time allows ample opportunity for inspection. A. E. Richey, Fairview, assignor to Fisk Rubber Co., Chicopee Falls, both in Mass.

1,737,143.* **PLATEN PRESS.** This invention provides a mechanism for the purpose of taking the load off the lower platen and thereby relieving the upper platen of this weight. It also arrests the downward movement of the ram sooner than formerly, thus reducing the time required to open and close the press. L. H. Burnham, Lexington, assignor by mesne assignments, to Hood Rubber Co., Inc., Watertown, both in Mass.

1,738,268.* **TUBE MAKING MACHINE.** According to this invention a tube of rubber or like material is formed by applying a solution or an aqueous dispersion of such substance to the interior surface of a revolving cylinder. D. F. Twiss and E. A. Murphy, assignors to Dunlop Rubber Co., Ltd., all of Birmingham, England.

1,740,029.* **INNER TUBE APPARATUS.** Raw rubber is extruded in the form of a tube and conveyed to the forming table without any stress or strain. In this connection a water cooling system is provided, which eliminates deformation due to natural shrinkage of the rubber. C. S. Moomy, Carlisle, Pa.

1,740,065.* **VULCANIZER.** This invention is directed to presses for receiving two- or three-part molds for articles like flaps, beads, and inner tubes of different sizes, and pressing the mold parts together in proper registry during vulcanization. H. C. Bostwick, Kenmore, assignor to Akron Standard Mold Co., Akron, both in O.

1,740,082.* **MOLDING APPARATUS.** This provides for symmetrical flow of the rubber stock from the extrusion device into each mold cavity of a heel mold for example. The extrusion device is constructed for complete enclosure and high compression of a large supply of stock. G. E. Foerstner, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,740,987.* **RIMMING PRESS.** This invention provides an adjustable means for various tire diameters for compressing bead forming rims or rings to place. The device is equally applicable to the compression or closing of the tire molds themselves. A. R. Krause, assignor to Gillette Rubber Co., both of Eau Claire, Wis.

1,737,110. **SECTIONAL REPAIR BAG.** C. H. Desautels, Springfield, assignor to Fisk Rubber Co., Chicopee Falls, both in Mass.

1,737,116. **TIRE BUILDER.** P. W. Lehman, Milwaukee, Wis., assignor to Fisk Rubber Co., Chicopee Falls, Mass.

1,737,146. **BIAS CUTTER.** M. Castricum, Springfield, assignor to Fisk Rubber Co., Chicopee Falls, both in Mass.

1,737,157. **BAND TURNER.** W. F. Irrgang, assignor to Fisk Rubber Co., both of Chicopee Falls, Mass.

1,737,762. **CONVEYER.** A. J. Howe, Cuyahoga Falls, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,738,018. **TIRE BEAD BUILDER.** F. B. Pfeiffer, Akron, and J. W. White, Barberton, both in O., assignors to Seiberling Rubber Co., a corporation of Del.

1,738,491. **TIRE INFLATING MACHINE.** R. W. Brown, assignor to Firestone Tire & Rubber Co., both of Akron, O.

1,738,503. **FLAT BAND TIRE BUILDER.** W. C. Stevens, assignor to Firestone Tire & Rubber Co., both of Akron, O.

1,738,504. **PRESSURE BAG REMOVER.** W. C. Stevens, assignor to Firestone Tire & Rubber Co., both of Akron, O.

1,738,505. **TIRE MACHINE.** W. C. Stevens, assignor to Firestone Tire & Rubber Co., both of Akron, O.

1,738,533. **HEEL BREASTING MACHINE.** B. F. Hartwell, Winchester, Mass.

1,740,034. **VULCANIZER.** W. M. Post, Hood River, Ore.

1,740,050. **TIRE BEAD TAPE MACHINE.** W. E. Van Lue, assignor to National Standard Co., both of Niles, Mich.

1,740,245. **COLLAPSIBLE CORE.** F. L. Johnson, Akron, O.

1,740,579. **TREAD ROLLER.** C. H. Desautels, Springfield, assignor to Fisk Rubber Co., Chicopee Falls, both in Mass.

1,740,580. **UNITING CRUDE RUBBER AND LEATHER.** E. F. H. Enna, Copenhagen, Denmark.

1,740,635. **TIRE BUILDER.** G. F. Wickle, Milwaukee, Wis., assignor to Fisk Rubber Co., Chicopee Falls, Mass.

Dominion of Canada

295,433. **VULCANIZER.** D. and R. Stambos, administrators of the estate of L. J. Stambos, deceased, in his lifetime of London, and A. A. Stambos, all of London, E. C. 1, England.

295,546. **PRESSING MACHINE.** Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of E. E. Clements, New Haven, Conn., U. S. A.

295,583. **VULCANIZING PRESS.** Ohio Rubber Co., Cleveland, assignee of B. Bronson, Lakewood, both in O., U. S. A.

295,876. **GOLF-BALL MACHINE.** O. J. Kuhlke, Akron, O., U. S. A.

United Kingdom

319,448. **VULCANIZER.** C. Macintosh & Co., Ltd., and H. C. Young, both of Manchester.

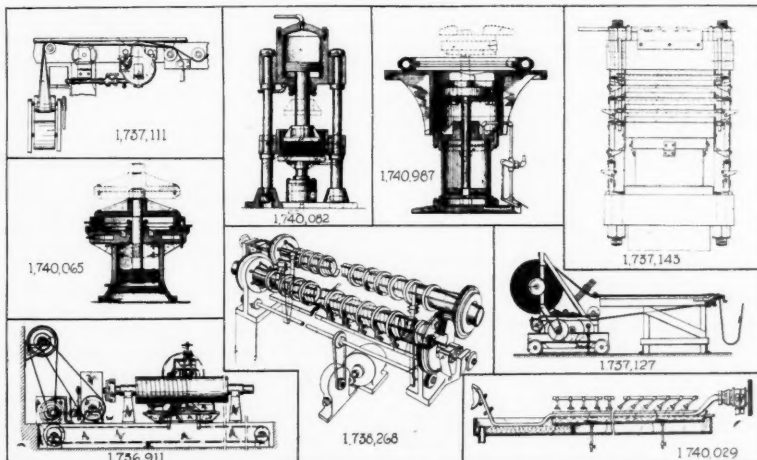
319,465. **MOLD OPENING DEVICE.** Firestone Tire & Rubber Co. (1922), Ltd., London. (Firestone Tire & Rubber Co., Akron, O., U. S. A.)

319,466. **AIRBAG REMOVER.** Firestone Tire & Rubber Co. (1922), Ltd., London. (Firestone Tire & Rubber Co., Akron, O., U. S. A.)

319,577. **SHOE VULCANIZING PRESS.** H. McGhee, Rushcutters Bay, near Sydney, Australia.

319,726.† **FABRIC COATING MACHINE.** Naugatuck Chemical Co., Naugatuck, Conn., assignee of J. McGavack, Leonia, N. J., both in the U. S. A.

† Not yet accepted.



* Pictured in group illustration.

320,049. GOLF-BALL TESTER. Dunlop Rubber Co., Ltd., London, H. Willshaw, and G. H. B. Yoxon, both of Fort Dunlop, Birmingham.

320,099. TENNIS-BALL TESTER. Dunlop Rubber Co., Ltd., London, J. T. T. Randes, and S. N. Goodhall, both of Fort Dunlop, Birmingham.

320,558. TIRE VULCANIZER. W. B. Burke, Cleveland, O., U. S. A.

Germany

487,572. ELECTRIC VULCANIZER. O. C. Dennis, Chicago, Ill., U. S. A. Represented by G. Benjamin, Berlin-Charlottenburg.

487,616. CALENDER. Continental Gummi-Werke A.G., Hannover.

487,617. VULCANIZING PRESS. Continental Gummi-Werke A.G., Hannover.

488,256. CALENDER. H. and A. Escher, A.G., Chemnitz.

488,336. TOY BALLOON APPARATUS. Radium Gummiwerke m.b.H., Koln-Dellbrück.

Designs

1,096,519. GROOVING TRES. Continental Gummi-Werke A.G., Hannover.

1,097,876. ELECTRICAL REPAIR MOLD. W. Hasselbach, Berlin W. 8.

1,098,623. MACHINE FOR INSULATION TAPE. Allgemeine Elektrizitäts-Gesellschaft, Berlin N. W. 40.

1,098,867. VULCANIZING PRESS. Continental Gummi-Werke A.G., Hannover.

Process

United States

1,737,415. PNEUMATIC TIRE. J. R. Gameter, Akron, O.

1,738,598. SHOE HEEL. R. S. Megathlin, Somerville, Mass., assignor to United Shoe Machinery Corp., Paterson, N. J.

1,739,481. TIRE CORD. K. B. Cook, Providence, and L. P. Gervais, Pawtucket, both in R. I., assignors to Manville-Jenckes Co., a corporation of R. I.

1,739,612. OVERSHOE. R. E. Riley, assignor to Miller Rubber Co., both of Akron, O.

1,739,821. GALOSH UPPER. E. S. Bott and A. S. Funk, assignors to La Crosse Rubber Mills Co., all of La Crosse, Wis.

1,740,079. EXTRACTING RUBBER FROM PLANTS. T. A. Edison, assignor to Edison Botanic Research Corp., both of West Orange, N. J.

United Kingdom

320,257. GOLF CLUB. F. H. Schavoir, Stamford, Conn., U. S. A.

320,451. FORMING ARTICLE JOINTS. W. W. Triggs, London. (Vereinigte Gummiwaren-Fabriken Wimpassing vorm. Menier-J. N. Reithoffer, Wimpassing, Austria.)

Germany

487,269. INFLATABLE, VARICOLORED ARTICLES. Vereinigte Gummiwaren-Fabriken Wimpassing vorm. Menier-J. N. Reithoffer, Wimpassing, Schwarzhathale, Austria. Represented by B. Bloch, Berlin N. 4.

487,516. RUBBER COVERED PAPER, ETC. G. F. Blombery, Lane Cove, near Sydney, Australia. Represented by W. Karsten and C. Wiegand, Berlin, S. W. 11.

Chemical

United States

17,511. (Reissue) ACCELERATOR. C. O. North, assignor to Rubber Service Laboratories Co., both of Akron, O.

1,736,899. ELECTRICAL INSULATION. C. R. Boggs, Waban, assignor to Simplex Wire & Cable Co., Boston, both in Mass.

1,737,133. RUBBER-FIBER ARTICLE. W. B. Wescott, assignor to Rubber Latex Research Corp., both of Boston, Mass.

1,737,384. ACCELERATOR. C. O. North and W. Scott, assignors to Rubber Service Laboratories Co., all of Akron, O.

1,737,391. ACCELERATOR. W. Scott, assignor to Rubber Service Laboratories Co., both of Akron, O.

1,737,775. RECLAIMING RUBBER. L. T. Smith, Kenil, N. J., assignor to Hercules Powder Co., Wilmington, Del.

1,738,509. WATERPROOF SHEET. L. Kirschbraun, Leonia, N. J.

1,738,776. AQUEOUS DISPERSIONS PROCESS. L. Kirschbraun, Leonia, N. J.

1,739,479. GAS-CELL FABRIC. W. C. Calvert, assignor to Goodyear Tire & Rubber Co., both of Akron, O.

1,739,480. ANTIOXIDANT. A. M. Clifford, assignor to Goodyear Tire & Rubber Co., both of Akron, O.

1,739,486. ACCELERATOR. L. B. Sebrell, assignor to Goodyear Tire & Rubber Co., both of Akron, O.

1,739,566. GUTTA PERCHA FROM LATEX. E. S. Ali-Cohen, The Hague, Netherlands.

1,739,578. SHOE STIFFENER. A. L. Clapp, Danvers, assignor to Beckwith Mfg. Co., Boston, both in Mass.

1,740,212. BITUMINOUS COMPOSITION. G. C. Warren, Newton, Mass.

1,740,994. TREATING RUBBER LATEX. J. McGavack, Jackson Heights, assignor to General Rubber Co., New York, both in N. Y.

Dominion of Canada

295,308. ACCELERATOR. W. Scott, Nitro, W. Va., U.S.A.

295,769. RUBBER COMPOSITION. I. G. Farbenindustrie A. G., Frankfurt-on-Main, assignee of H. Lecher, Leverkusen-Rhine, and E. Konrad, Köln-Mülheim-Rhine, all in Germany.

295,792. VULCANIZATION. Industrial Process Corp., Albany, assignee of General Carbonic Co., New York, assignee of H. R. Minor, Ossining, all in N. Y., U.S.A.

United Kingdom

319,261. COATED FABRICS. A. A. Glidden, Watertown, and W. R. Hickler, Weston, both in Mass., U.S.A.

319,344.† RUBBER EMULSIONS. Anode Rubber Co., St. Peter's Port, Guernsey, assignee of E. B. Newton, Akron, O., U.S.A.

319,371.† PLASTICS. I. G. Farbenindustrie A. G., Frankfurt-on-Main, Germany.

† Not yet accepted.

319,410. LATEX CONCENTRATING. Dunlop Rubber Co., Ltd., London; H. J. Alcock, Fort Dunlop, Birmingham; Anode Rubber Co. (England), Ltd., London; W. L. Utermark, Bussum; J. D. Sickler, J. A. Blickman, J. F. De Wal and N. W. Sickler, trading as Koopman & Co., Amsterdam, both in Holland; and Aktiebolaget Separator, Stockholm, Sweden.

319,416. RUBBER FLOORING, ETC. M. M. Dessau and S. L. Flores, both in London.

319,440. ADVERTISING DUMMY ARTICLES. T. & T. Vicars, Ltd., and R. A. Collinge, Earlstown, Lancaster.

319,783.† MULCHES FOR CULTIVATED LAND. T. Whittelsey, Ringoes, N. J., U.S.A.

319,801. COAGULATING RUBBER. Anode Rubber Co., Ltd., London.

319,904. ROAD-MAKING MATERIALS. Hewitt (Darlaston), Ltd., and A. Hewitt, Darlaston.

319,910. GOLF BALLS. A. E. Penfold, Wylde Green, Warwickshire.

320,186. FLEXIBLE SHAFT COUPLINGS. F. R. Simms and Simms Motor Units, Ltd., London.

320,209. PURIFYING GUTTA PERCHA. A. E. Penfold, Wylde Green, Warwickshire.

320,362. SYNTHETIC RUBBER. From coal, mineral oil, etc. J. Y. Johnson, London. (I. G. Farbenindustrie, A.G., Frankfurt-on-Main, Germany.)

320,370. ELECTRIC INSULATION. W. S. Smith, Newton Popleford, Devon; H. J. Garnett, Sevenoaks, J. N. Dean, Orpington, both in Kent; B. J. Habgood, Bournemouth; and H. C. Channon, London.

320,387. DEPOSITING RUBBER FROM DISPERSIONS. Dunlop Rubber Co., Ltd., London; G. W. Trobridge and E. A. Murphy, Fort Dunlop, Birmingham.

320,410. PRINTING INK. H. N. Morris, Whalley Range, Manchester.

320,427. HARD-WEARING RUBBER SURFACES. W. C. Geer, New Rochelle, N. Y., U.S.A.

320,509. COMPOUND TRANSPARENT FABRICS. O. Klotz, Göppingen, Württemberg, Germany.

Germany

487,776. RUBBER CONVERSION PRODUCTS. B. F. Goodrich Co., New York, N. Y., U. S. A. Represented by G. Benjamin, Berlin-Charlottenburg.

487,777. VULCANIZING RUBBER. Naugatuck Chemical Co., Naugatuck, Conn., U. S. A. Represented by K. Michaelis, Berlin, W. 50.

488,208. VULCANIZING METHOD. S. J. Peachey, London, and Allan Skipsey, Woking, Surrey, both in England. Represented by B. Kugelmann, Berlin S. W. 11.

General

United States

1,736,798. MOP. H. J. Ostdiek, Minneapolis, Minn., and M. E. Hanke, Oshkosh, Wis.

1,737,177. BUS BODY MOUNTING. G. M. Schantz, Allentown, Pa., assignor to International Motor Co., New York, N. Y.

1,737,237. FLASHLIGHT SUPPORT. F. Helting, Hoboken, N. J.

1,737,243. EDGE BINDER. H. B. Houston, New York, N. Y.

1,737,368. INNER TUBE. A. G. Fitz Gerald, Brookline, Mass.

- 1,737,434. ANTI-SHRINKABLE DRESS FORM. S. G. Sahagian, Pocahontas, Va.
- 1,737,460. HAIR-PRESSING CAP. W. G. Johnson, New Orleans, La.
- 1,737,463. FOUNTAIN PEN. I. Levi, Turin, Italy.
- 1,737,954. FOUNTAIN PEN. J. L. H. Wilson, Westboro, Ont., Canada.
- 1,738,048. HEEL. J. O. Goodwin, Akron, assignor to Seiberling Rubber Co., Barberton, both in O.
- 1,738,273. LICENSE PLATE FRAME. E. Anderson, Briarcliff Manor, N. Y., assignor of three-fourths to Olson Bros. Saw Mfg. Co., a corporation of N. Y.
- 1,738,411. INFANTS' REST AND EXERCISER. O. P. Welch, St. Ignace, Mich.
- 1,738,472. ABRASIVE WHEEL. J. R. Gam-meter, assignor to Geo. W. Perks Co., both of Akron, O.
- 1,738,571. PAVEMENT SURFACE. T. Gare, Stockport, England.
- 1,738,621. TIRE SAFETY VALVE. D. E. Washington, 2d, Kansas City, Mo.
- 1,738,775. STAIR TREAD AND HOLDER. J. C. Jacques, Buffalo, N. Y.
- 1,738,927. PNEUMATIC TIRE VALVE. P. M. Salerno, Route de Villefrance, assignor to M.-T.E. Salerno, both of Nice, France.
- 1,739,012. TELEPHONE PLUG CORD. W. I. Middleton, Watertown, assignor to Simplex Wire & Cable Co., Boston, both in Mass.
- 1,739,019. ELECTRIC CONNECTION. H. E. Smith, Cleveland Heights, O.
- 1,739,025. SPRING SHACKLE. R. H. Chilton, assignor to Inland Mfg. Co., both of Dayton, O.
- 1,739,121. DISHWASHER SWINGING COVER. F. G. Brotz, assignor to Kohler Co., both of Kohler, Wis.
- 1,739,185. FLOAT BALL VALVE. E. L. Stimson, Eggertsville, N. Y., assignor to Essex Rubber Co., Trenton, N. J.
- 1,739,288. AMPUL. A. A. Brown, St. Louis, Mo.
- 1,739,370. TIRE. E. S. Moulton, St. Johns Park, Fla.
- 1,739,385. OIL-WELL SWAB RUBBER. W. G. Bisbee and B. P. Hoffman, both of Bristow, Okla.
- 1,739,483. TEAT CUP. R. L. Hinman, assignor to Hinman Milking Machine Co., both of Oneida, N. Y.
- 1,739,989. ABDOMINAL BANDAGE. A. E. Sauter, Bronx, N. Y.
- 1,740,022. TERRESTRIAL GLOBE. T. Kamei, Tokyo-Shi, and F. Kuwata, Tokyo-Fu, both in Japan.
- 1,740,041. VALVE. F. Schmidt, Wauwatosa, assignor to Allis-Chalmers Mfg. Co., Milwaukee, both in Wis.
- 1,740,076. ELECTRIC CABLE. J. Delon, Lyon, assignor of one-half to Compagnie Generale d'Electricite, Paris, both in France.
- 1,740,173. TIRE VALVE. H. Hasting, Detroit, Mich.
- 1,740,189. FOUNTAIN PEN. C. E. Marshall, Brooklyn, N. Y.
- 1,740,445. CORD REENFORCED TUBE. E. Fetter, Baltimore, Md.
- 1,740,459. HYPODERMIC SYRINGE. G. N. Hein, San Francisco, Calif.
- 1,740,614. RAINCOAT. A. Marquist, Saugatuck, Mich., assignor of one-half to E. F. Marquist, Chicago, Ill.
- 1,740,616. NONSKID TIRE. T. Midgley, Hampden, assignor to Fisk Rubber Co., Chicopee Falls, both in Mass.
- 1,740,633. HEEL. W. B. Wescott, Dover, assignor to Rubber Latex Research Corp., Boston, both in Mass.

- 1,740,634. VEHICLE INDICATOR SWITCH. J. L. Wettlaufer, Belmont, Mass.
- 1,740,846. IMPERVIOUS SEAPLANE FLOAT. C. A. Van Dusen, assignor to Glenn L. Martin Co., both of Cleveland, O.
- 1,740,883. SHINGLE. H. A. Teeple, Greene, Iowa.
- 1,740,904. JAR SEALING RING. A. M. Kini, Dover, O.
- 1,740,927. INFLATABLE GLOBE MAP. A. Landini, Genoa, Italy.
- 1,740,976. DETACHABLE HEEL. A. C. Farrar, Whitman, Mass.
- 1,740,984. NECKTIE. J. J. Hynes, University City, Mo.
- 1,740,989. COMPOSITE GLASS APPARATUS. W. O. Lytle, New Kensington, Pa., assignor to Pittsburgh Plate Glass Co., a corporation of Pa.
- 1,741,037. HALF-HEEL. C. Roberts, Winchester, Mass., assignor, by mesne assignments, to United Shoe Machinery Corp., Paterson, N. J.

Dominion of Canada

- 295,477. BELT. M. Luftig, Oak Park, Ill., U. S. A.
- 295,480. TENNIS BALL. R. H. McHardy, Northwood, Co. of Hertford, England.
- 295,547. TIRE CASING. Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of C. M. Sloman, Detroit, Mich., U. S. A.
- 295,574 and 295,575. SUPPORTING BELT. Moore Fabric Co., assignee of J. V. Moore, both of Pawtucket, R. I., U. S. A.
- 295,584. ROLL. Oxford Varnish Corp., assignee of L. V. Casto, both of Detroit, Mich., U. S. A.
- 295,888. HYDRAULIC TURBINE. L. F. Moody, Philadelphia, Pa., U. S. A.
- 295,889. TIRE SAFETY INDICATOR. R. Münnich, Dresden - Altstadt, Saxony, Germany.
- 295,913. BOOT. W. M. Urbanek, Berlin-Friedenau, Germany.
- 295,917. FOUNTAIN PEN. J. L. H. Wilson, Westboro, Ont.
- 295,936. WORK SHOE. H. H. Brown Shoe Co., Inc., North Brookfield, Mass., assignee of D. J. Danahy, Chicago, Ill., both in the U. S. A.

United Kingdom

- 319,282.† UNEVEN SURFACE PRINTING. Masa Ges. Zur Herstellung Kunstlicher Oberflächen, Berlin, Germany.
- 319,488. PHOTOGRAPHIC DEVELOPER. A. G. Gordon, Hove, Sussex.
- 319,489. MASSAGER. S. Stephani, Zürich, Switzerland.
- 319,554. VACUUM FASTENER. A. A. D. Lang, Gerrards Cross, Buckinghamshire.
- 319,630. PNEUMATIC RING CUSHION. L. F. Gardner, London. (Isana Vertrieb Sanitärer Artikel Ges., Nuremberg, Germany.)
- 319,640. TIRE. A. J. Grafham, Catford, London, and T. Priest, Harewood, Great Missenden, Buckinghamshire.
- 319,649.† VEHICLE BUMPER. Lusse Bros., Inc., assignee of R. J. Lusse, both of Philadelphia, Pa., U. S. A.
- 319,666.† ATOMIZER. W. Zipper, Vienna, Austria.
- 319,756.† SUBMARINE CABLE. Felten &

† Not yet accepted.

- Guillaume Carlswerk Akt.-Ges., Mulheim, Cologne, Germany.
- 319,874. DIAPHRAGM. F. Charles, Wrottesley, near Wolverhampton.
- 319,884. ELECTRIC CABLE. Siemensschuck-ertwerke Akt.-Ges., Siemensstadt, and E. Wille, West-end, both in Berlin, Germany.
- 319,972. TOY PUNCH BALL. E. P. McCarthy, and R. F. Beauchamp, both in Battersea, London.
- 319,979. PURSE. D. Fairbairn, Amityville, L. I., N. Y., U. S. A.
- 320,077. TOY BALLOON. J. S. Shane, Westcliff-on-Sea.
- 320,153. STENCIL SHEET HOLDER. E. Lefebure and J. E. Chambers, both in London.
- 320,183. TENNIS RACKET. S. Lee, St. Mary Platt, and G. Stanley, Boro' Green, near Sevenoaks, both in Kent.
- 320,198. LOUDSPEAKER DIAPHRAGM. C. M. De C. De La Bourdonnais [Prince De Mahé], Kensington, London.
- 320,247. STOPPER. P. Swan, Rye, Sussex.
- 320,411. AIRCRAFT SHOCK ABSORBER. T. Sloper, Devizes, Wiltshire.
- 320,486. VEHICLE HOOD. H. Austin, Bromsgrove, Worcestershire.
- 320,488. SHOE STIFFENER. H. S. Pochin and L. A. Holden, both of Leicester.
- 320,535. ATTACHING TIRES TO RIMS. India Rubber, Gutta Percha & Telegraph Works Co., Ltd., and W. L. Avery, of India Rubber, Gutta Percha & Telegraph Works, Silvertown, both in London.

Germany

- 487,141. DRIVING BELT. R. J. Gits, Chicago, Ill., U. S. A. Represented by W. Fritze and E. Boas, Berlin S. W. 61.
- 487,895. TEN SECTION BALL. I. and L. Dorogi and Dr. Dorogi & Co., Gummi-fabrik A. G., Budapest, Hungary. Represented by W. Fritze and E. Boas, Berlin S. W. 61.
- 488,021. CLOSING MINING DRIFTS. H. Hofer, Ostrau, Czechoslovakia. Represented by M. Kuhlmann and W. Stuhlmann, Bochum.
- 488,268. GARMENT PROTECTOR. S. Imbach, Dresden-A.
- 488,737. TENNIS BALL. R. H. McHardy, Northwood, England. Represented by B. Bloch, Berlin N. 4.

Designs

- 1,096,203. DROP-CENTER FELLY RIM. Continental Gummi-Werke A. G., Hannover.
- 1,096,351. RUBBER-REENFORCED GARMENT. A. Schlesinger, Claussnitz, Bez. Leipzig.
- 1,096,420. TUBE. Vereinigte Gothania-Werke A. G., Gotha.
- 1,096,462. BOTTLE CLOSING DEVICE. H. Groninger, Frankfurt a. Main.
- 1,096,502. HOT WATER BOTTLE. C. Muller, Gummiwarenfabrik A. G., Berlin-Weissensee.
- 1,096,836. OVERSHOE. S. Juda, Berlin W. 15.
- 1,096,890. GAS TUBE. S. Herz G.m.b.H., Berlin S. O. 36.
- 1,097,277. BUTYROMETER COVER. Dr. N. Gerber's Co. m.b.H., Leipzig C. 1.
- 1,097,413. ELASTIC BANDAGE. Lohmann A. G., Fahr a. Rhein.
- 1,097,574 and 1,097,872. APRON. Firma M. Steinberg, Köln-Braunsfeld.
- 1,097,603. BALLOON. G. Gross, Memmingen, Bavaria.

- 1,098,005. ANTISKID SOLES AND HEELS. Gummi-Werke Elbe A. G., Klein-Wittenberg.
- 1,098,112. FURNITURE LEG INSERT. E. Schulz, Celle.
- 1,098,317. BRUSH. H. Klopfel, Hohenzollernring, 71, Kiel.
- 1,098,359. ICE BAG. Schack & Pearson, Hamburg 11.
- 1,098,445. CLOTHES DAMPENER. A. Rieser, Hafenbad Ulm a.d.D.
- 1,098,542 and 1,098,550. ANTISKID FOR TIRES. Continental Gummi-Werke A.G., Hannover.
- 1,098,733. BOOT. Harburger Gummiwaren-Fabrik Phoenix A. G., Harburg-Wilhelmsburg.
- 1,099,172. SPONGE RUBBER SEAT. O. Kuhne, Bielefeld.
- 1,099,437. ELASTIC ROLL. G. A. Schulz, Heidelberg.

Trade Marks

United States

- 264,339. LOTOL. Adhesives. Naugatuck Chemical Co., New York, N. Y.
- 264,383. TIP TOES. Footholds of rubber or rubber and fabric. United States Rubber Co., New York, N. Y.
- 264,386. Shield containing the words: "WOMEN'S HEALTH SHOE"; to the left, the words: "DR. FARBER'S FLEXIBLE GOODYEAR WELT." Boots and shoes of rubber, leather, or fabric, or combinations thereof. S. J. Farber, Jamaica Plain, Mass.
- 264,398. BEE BALL. Balls, particularly inflated spherical balls. C. W. Beeman, Highland Park, Mich.
- 264,467. GUNITE. Hose. Cement Gun Co., New York, N. Y.
- 264,473. TRULY FOOTWEAR. Footwear of rubber, leather, fabric, or the combination thereof. Zarne Shoe Corp., Milwaukee, Wis.
- 264,475. Frame containing representation of a shoe and a panther and the word: "PANTHER." Boots and shoes of leather, rubber, or textile material, and combinations thereof. A. Atmanspacher, Ehrenfriedersdorf, Germany.
- 264,476. SUBMARINE. Bathing caps and sandals, and belts. Lew-Mar Products Co., New York, N. Y.
- 264,538. PANCRUM WILL NOT MARK FLOORS. Taps or soles. Panco Rubber Co., Chelsea, Mass.
- 264,540. VICTOR. Heels. Panther Rubber Mfg. Co., Stoughton, Mass.
- 264,543. Fanciful design consisting mainly of triangles and a cropped circle containing the letter: "J," and below, the word: "JAX." Heels and soles. Holtite Mfg. Co., Baltimore, Md.
- 264,544. VAK-KAP. Bathing caps. T. J. Howland, Long Branch, N. J.
- 264,545. Rectangle containing the words: "BOYS FAVORITE." Boys' shoes of leather and/or rubber, or any combination thereof having rubber soles. Endicott Johnson Corp., Endicott, N. Y.
- 264,546. Representation of a hide and a rectangle across and below which appear the words: "ENDICOTT JOHNSON BOY'S FAVORITE AMERICA'S STANDARD." Boys' shoes of leather and/or rubber or any combinations thereof. Endicott Johnson Corp., Endicott, N. Y.
- 264,548. Square, with each corner a dark triangle, containing representation of the outline and bones of a foot and the words: "FOOT-BRACER MAKES MILES SMILE." Shoes of leather, rubber, cloth, or other fabric, and/or any combinations thereof. Stern-Auer Co., Cincinnati, O.
- 264,602. FARREL-BIRMINGHAM. Machines, presses, calenders, etc. Farrel-Birmingham Co., Inc., Ansonia, Conn.
- 264,606. Diamond containing the words: "NARCO DRUG CO. INC. 418 and 420 So. 4TH ST. ST. LOUIS, MO.," and an ellipse containing the words: "YANKEE BOY." Druggists' sundries. Narco Drug Co., Inc., St. Louis, Mo.
- 264,777. O-SO-SURE. Mats. Eno Rubber Corp., Los Angeles, Calif.
- 264,788. Streamer across a double circle and below, the word: "WICKFIELD." Men's and boys' clothing including raincoats, footwear, suspenders, and garters. Clothiers Corp., Chicago, Ill.
- 264,802. COLUMBUS. Rubber pencils, bands, pencil tips, erasers, etc. A. W. Faber, Inc., Newark, N. J.
- 264,829. AIRFLIGHT. Pneumatic-tire casings wholly or partly of rubber. Fisk Rubber Co., Chicopee Falls, Mass.
- 264,889. TANNITE. Rubber covered rolls for machinery. Stowe & Woodward Co., Newton Upper Falls, Mass.
- 264,891. Circle containing representation of two eagles atop a peak and above, the words: "DOUBLE EAGLE." Storage batteries. Goodyear Tire & Rubber Co., Akron, O.
- 264,902. SWIM-RITE. Swimming belts. DeLion Tire & Rubber Corp., Baltimore, Md.
- 264,946. BLACK CIRCLE. Golf balls. Wright & Ditson, Boston, Mass.
- 264,950. Representation of a smiling little boy in a sleeping garment holding a lighted candle in his left hand and a tire casing in his right. Pneumatic tires and tubes, tire flaps, fan belts, hose, plugs, all wholly or partly of rubber, and tire covers of waterproof fabric. Fisk Rubber Co., Chicopee Falls, Mass.
- 264,951. Representation of the Fisk Boy before a sign containing the word: "FISK." Pneumatic tires and tubes, tire flaps, fan belts, hose, and plugs, all wholly or partly of rubber. Fisk Rubber Co., Chicopee Falls, Mass.
- 264,961. Representation of a shoe sole in dotted lines; the trade mark consists of a figure having two portions disposed at an obtuse angle, one portion extending along one side of the shank of the sole and the other portion extending diagonally across the rear portion of the ball of the sole. Shoes of leather, rubber, or fabric, or any combinations thereof. Endicott Johnson Corp., New York, N. Y.
- 264,962. NUVO. Shoulder straps. I. B. Kleinert Rubber Co., New York, N. Y.
- 264,963. Ellipse containing the word: "APOLLOS." Prophylactic articles. L. Hilsenbeck, Inc., New York, N. Y.
- 264,976. Representation of a pennant containing the letters: "F/D." Tires. Federal Rubber Co., Cudahy, Wis.
- 265,035. HEALTH-MODE. Footwear of leather and combinations of leather and rubber, leather and fabric, and fabric and rubber. I. Simon, Chicago, Ill.

- 265,040. ELEPHANT. Hose, belting, and packing of rubber or rubber and fabric. United States Rubber Co., New York, N. Y.
- 265,183. COLLAN. Belting, hose, and packing. A.-B. Collan-Olje-Fabriken, T. Olsen, Stockholm, Sweden.
- 265,264. LUXOR. Tires and tubes. Northern Rubber Co., Barberton and Akron, Ohio.
- 265,298. Representation of the Fisk Boy. Cements and gums. Fisk Rubber Co., Chicopee Falls, Mass.
- 265,299. Representation of the Fisk Boy before a sign containing the word: "FISK." Cements and gums. Fisk Rubber Co., Chicopee Falls, Mass.
- 265,335. Hectagon containing representation of a baby with a toy in one arm, leaning against a pillow, and above, the words: "OPEN-FACE." Infants' rubber aprons. Hoover Open-Face Infant Sanitary Apron Co., Woodland, Calif.
- 265,420. KRO-FLITE. Golf balls. A. G. Spalding & Bros., New York, N. Y.
- 265,434. "SCOTCH FLIER." Golf balls and equipment. Raymond Trigger Co., Inc., New York, N. Y.
- 265,446. OLYMPIC. Tires and inner tubes. New England Mills Co., Chicago, Ill.
- 265,460. PARA-MORAYTONE. Shower curtains. Para Rubber Co., Newark, N. J.

Dominion of Canada

- 48,034. Seal having outer periphery of blue containing the word: "GOODYEAR," and a white central portion containing the word: "CORD." Tires and tubes wholly or partly of rubber. Goodyear Tire & Rubber Co. of Canada, Ltd., New Toronto, Ont.
- 48,035. Two spaced substantially concentric silver stripes or bands, disposed centrally of and extending circumferentially around the sidewall portion of a tire casing, and placed symmetrically on opposite sides thereof. Goodyear Tire & Rubber Co. of Canada, Ltd., New Toronto, Ont.
- 48,041. RUBBERSAN. Rubber sponges, also in shapes of soap dishes, etc. Rubbersan Products, Inc., New York, N. Y., U. S. A.
- 48,112. Plurality of concentric circles on sidewall of a tire, consisting of one inner flattened bead, an intermediate serrated red band, and one outer flattened bead. Tires. India Tire & Rubber Co., Akron, O., U. S. A.
- 48,176. PATRICIAN. Fountain pens and automatic or refillable pencils of metal, rubber, or any other material or synthetic material or materials, or any combinations thereof. L. E. Waterman Co., Ltd., Montreal, P. Q.
- 48,177. CAVALIER. Fountain pens and automatic or refillable pencils of metal, rubber, or of any other natural or synthetic material or materials, or any combination thereof. L. E. Waterman Co., Ltd., Montreal, P. Q.
- 48,178. CRUSADER. Fountain pens and automatic or refillable pencils of metal, rubber, or of any other natural or synthetic material or materials, or any combination thereof. L. E. Waterman Co., Ltd., Montreal, P. Q.
- 48,181. Shield containing the letter: "M" and the word: "MARATHON." Soles and heels for boots and shoes wholly or partly of rubber. Goodyear Tire & Rubber Co. of Canada, Ltd., New Toronto, Ont.

RUBBER MARKET REVIEW

1929

NEW YORK EXCHANGE

BUSINESS on the New York Rubber Exchange in 1929 exceeded that done in 1928 by nearly 15 per cent. The tonnages represented by the transactions totaled 491,215 in 1929 and 418,422.5 tons in 1928. The tonnages of monthly transactions for both years are shown in the accompanying graph and table.

The 1929 market opened steady and inactive. Bull influences soon appeared, and the tremendous volume of dealer and commission support was increased by a broad participation of European buying, general public demand, and speculative activity. January proved to be the heaviest month of 1929 as to volume of transactions, which totaled 31,647 lots, equivalent to 79,117½ tons.

As the month closed, futures advanced rapidly and attained highs ranging from 22.1 cents for January rubber to 23½ cents for December position. January 31 closing prices: March, 22.1 to 22.2 cents; July, 22.9 cents; October, 23.2 cents nominal.

Tire price reduction caused some unsettlement in the opening of the February market. By the middle of the month urgent buying was evident, for all positions, and trading was the most active since the lifting of rubber restriction. Prices advanced over three cents in the week, and new high records for all positions were made. The fact that London stocks had not increased according to expectations aided the upward swing of prices. The month closed with all futures advanced. Nearby positions were somewhat above the 25-cent level, and the more distant ones approached 27 cents. February 28 closing prices: March, 26.5 cents nominal; July, 26.8 to 26.9 cents; October, 27.0 cents nominal.

The market in March was generally quiet with prices weak and drastically declining after the middle of the month. The reason for this was obscure, but the explanation was offered that the weak holders and buyers were steadily pressing the market; that caused continued liquidation. March 31 closing prices: April, 22.8 cents nominal; July, 23.4 to 23.5 cents; September, 23.7 to 23.8 cents; December, 24.0 to 24.1 cents.

The first week of April prices for all positions advanced to their peak for the month: namely, from 23 to 24½ cents according to the remoteness of the position. The tone for the most part was dull with prices soft and declining after the first

week. The so-called "pool" interest withdrew its support about the third week. The market for the month proved a discouragement and hardship for those bullishly inclined, while the shorts had their own way. By the end of the month futures in all positions had declined about 1½ cents from their highs. April 30 closing prices: July, 20.2 to 20.3 cents;

The market in July held continuously quiet and steady. Prices declined slowly from the June close and then for about two weeks were very steady, showing a slight rally during the last week of the month when trading became more active. The month closed very steady with good buying. July 31 closing prices: September, 21.3 to 21.4 cents; December, 22.4 cents; March, 22.9 to 23.0 cents.

During the entire month of August trading was very quiet and transactions totaled much less than in July. The month closed with considerable underlying strength and very few traders taking a short position except for quick trading profits. Prices at the close of the month were somewhat lower than at the close of July. August 31 closing prices: September, 19.9 cents; December, 20.9 cents; March, 21.5 cents; May, 21.8 to 21.9 cents.

The September market was generally dull, with very little buying interest shown. Reports of tire production curtailment caused much uncertainty as to rubber consumption for the balance of the year, and

sentiment became very mixed. Considerable bearish feeling existed, but the market could not be considered weak. Prices held very close to the 20-cent level for spot, and futures of all positions were steady. The nearest future was about 20½ cents and those farthest remote were under 23 cents. September 30 closing prices: December, 20.2 to 20.3 cents; March, 21.0 to 21.1 cents; June, 21.7

cents nominal. Only 15,330 tons were sold.

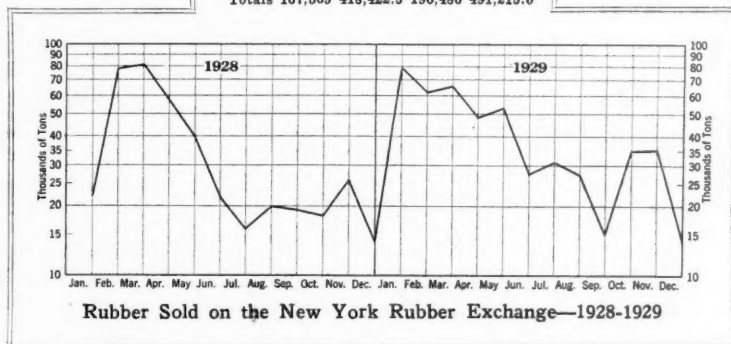
The October market was considered dull, but prices were steady and transactions were nearly 2¾ times greater than in September. The decline in automobile and tire production in particular and the reduction noted in general industry affected the market adversely. The dominating influence on prices was the crash of security values on the New York stock market. Following that event, futures sharply declined. October 31 closing prices: December, 18.6 cents; March, 19.3 cents; July, 19.7 to 19.9 cents.

In November a continuous decline of prices took place although total transactions equaled those of October. By the middle of the month new low prices were established, and November and December sold below 16 cents. The decline was attributed to liquidation of long accounts in the financial district as well as to unfavorable news from the tire and automobile industries. There was much talk that

RUBBER EXCHANGE ACTIVITIES

Contracts Sold

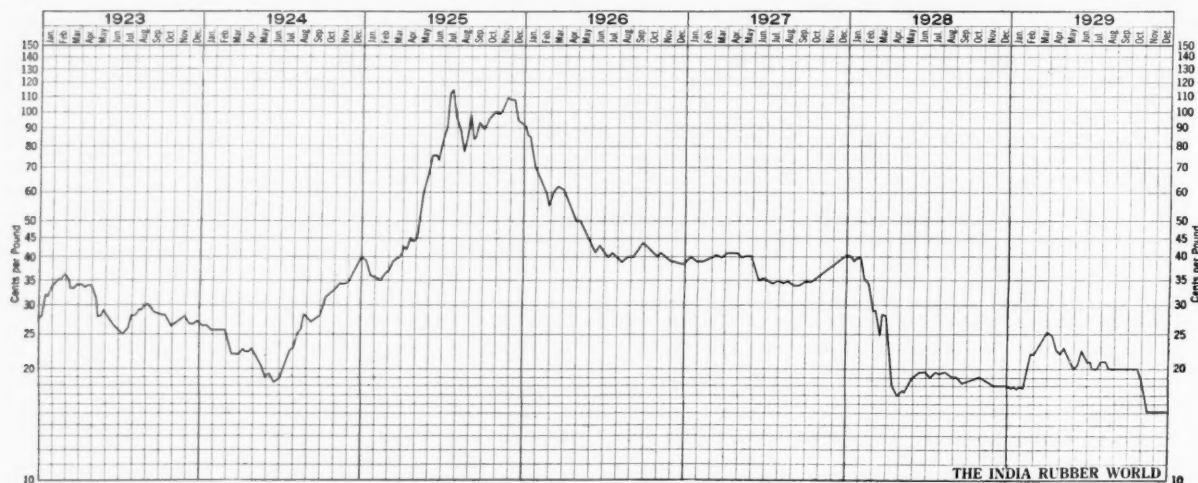
Month	1928		1929	
	Number	Tons	Number	Tons
Jan.	8,858	22,145.0	31,647	79,117.5
Feb.	32,367	80,917.5	24,555	61,387.5
Mar.	32,491	81,227.5	26,243	65,607.5
Apr.	23,665	59,162.5	19,339	48,347.5
May	15,948	39,870.0	21,152	52,880.0
June	8,706	21,765.0	11,005	27,512.5
July	6,358	15,895.0	12,402	31,005.0
Aug.	7,980	19,950.0	10,793	26,982.5
Sept.	7,731	19,327.5	6,132	15,330.0
Oct.	7,238	18,095.0	13,738	34,345.0
Nov.	10,343	25,857.5	13,646	34,115.0
Dec.	5,684	14,210.0	5,834	14,585.0
Totals	167,369	418,422.5	196,486	491,215.0



September, 20.4 to 20.5 cents; December, 20.8 to 20.9 cents.

The May market opened with prices reacting upward from the April close. This condition gave way within ten days to a generally dull tone with prices steadily sagging except for an occasional advance. Late in the month the tone was distinctly heavy with losses amounting to slightly less than three cents a pound. This disturbing factor met with no adequate explanation. May 31 closing prices: June, 21 cents nominal; September, 21.8 to 21.9 cents; December, 22.1 to 22.2 cents; March, 22.5 cents bid.

June prices rose sharply in active trading until the middle of the month and reached the level of the highest in May. In the latter half of the month an equally sharp decline brought prices, at the close of the month, down almost to those at the end of May. June 30 closing prices: September, 21.0 cents; December, 21.6 cents; March, 22.3 to 22.4 cents.



New York Outside Market—Closing Prices Ribbed Smoked Sheets—1923-1929

prices had reached bottom and that any further recessions would not long prevail. November 30 closing prices: December, 16.0 to 16.1 cents; March, 17.0 to 17.1 cents; July, 17.9 to 18.0 cents.

The December market was continuously under depressing influences. These were the continued increase of London and Liverpool stocks, larger weekly invoices to the United States, the resulting accumulation of domestic stocks, and further curtailment of consumption by the industries using crude rubber and rubber products. Fluctuations of rubber prices were extremely narrow with spot holding steady at 15 cents. Futures held steady until after the middle of the month, then declined sharply. On December 23 December rubber fell to 15.1 cents the lowest for the year. December 31 closing prices: March, 16.5 to 16.6 cents; June, 17.2 cents nominal; September, 17.8 to 17.9 cents.

New York Outside Market

In January, 1929, the factories confined their purchases mostly to hand-to-mouth needs, looking for prices to drop. This applied particularly to those who missed the 18-cent level prevailing very early in the month. The heavy monthly invoices were absorbed by strong consuming interests. The year began with spot ribs at 18 cents and on January 31 closed at 22½ cents.

The leading feature of the February market was the strong and steady advance of spot ribs and the active factory buying, which continued until nearly the end of month on which date spot ribs closed at 26¾ cents, the high for the year.

In March the trend of spot was mostly downward gradually at first but more rapidly after the middle of the month. Factories were watching the decline and waiting for the market to become steady. The last spot price for the month was 22½ cents.

April business in actuals was dull and restricted with declining prices due to easiness in the primary markets. Enough

rubber was offered by foreign shippers to take care of all demand in the outside market. Spot closed on April 30 at 19½ cents.

In May there was little factory buying. From the fourth to the twentieth spot made a gradual rise to 23½ cents, then declined somewhat sharply to 21¼ cents at the end of the month.

Foreign Trade Information

For further information concerning the inquiries listed below address United States Department of Commerce, Bureau of Foreign and Domestic Commerce, Room 734, Custom House, New York, N. Y.

NUMBER	COMMODITY	CITY AND COUNTRY
†42,780	Garden hose.....	Magdeburg, Germany
†42,812	Offset printers' Prague, Czechoblocks	slovakia
*42,814	Footwear	Esbjerg, Denmark
†42,815	Hospital sheetings and hot water bottles.....	Zurich, Switzerland
†42,819	Galoshes	Vienna, Austria
*42,825	Canvas shoes.....	Cali, Colombia
*†42,839	Boots and shoes.....	Schwelm, Germany
†42,870	Druggists' sun-dries	Buenos Aires, Argentina
†42,875	Aprons, bibs, sanitary articles, and overshoes.....	Hamburg, Germany
†42,901	Pencil erasers.....	Rio de Janeiro, Brazil
†42,918	Tires and tubes.....	Berlin, Germany
†42,920	Tennis shoes.....	Paris, France
*42,964	Toy balloons.....	Frankfort, Germany
*42,965	Scrap and waste rubber	Frankfort, Germany
†42,974	Tennis shoes.....	Tegucigalpa, Honduras
*42,994	Waste rubber.....	Frankfort, Germany
†43,003	Footwear	Berlin, Germany
†43,038	Canvas shoes.....	Buenos Aires, Argentina
*43,057	Galoshes	Florence, Italy
†43,060	Sport shoes.....	Buenos Aires, Argentina
†43,070	Rubber bands.....	Frankfort, Germany
*43,109	Tires and tubes.....	Toronto, Canada
*†43,113	Footwear	Crema, Italy
†43,121	Rubber goods.....	Haifa, Palestine
†43,134	Men's belts.....	Milan, Italy
*43,188	Soles	Breslau, Germany
*†43,190	Footwear	Glasgow, Scotland
*†43,191	Automobile bumpers	Geneva, Switzerland
†43,192	Notions and bathing caps.....	Melbourne, Australia
†43,197	Surgical and dental supplies.....	Berlin, Germany
*43,217	Tires	Warsaw, Poland
†43,257	Hawsters, machinery packing, and belting.....	Oslo, Norway
*†43,307	Thread	Prague, Czechoslovakia

*Purchase. †Agency. *†Purchase and agency, †Either.

June was a dull month. Manufacturers were buying very little actual rubber because supplies were ample and they had no need to enter the market. Spot rubber slowly declined to 20½ cents on June 29.

In July manufacturers generally were holding back as prices slowly declined after a brief rally early in the month. Spot ribs, however, were maintained well above the 20-cent level and on July 31 closed at 21½ cents.

August was another dull month for actuals, with the market getting narrower. The factories maintained their attitude of watchful waiting as prices moved downward very gradually to the 20-cent level and slightly below. On August 30 spot closed at 19.5 cents.

September business in actuals was generally dull with prices very steady and strong nearly all the month just above the 20-cent level for spot. On September 30 the close was 19.1 cents.

October market activity closely resembled that of September. There was no incentive for manufacturers to buy beyond maintaining their usual margin of supplies against current production needs. Spot prices were firm at the 20-cent level the entire month, closing on October 31 at 18½ cents.

The market in November showed the same lack of factory buying interest as for several previous months, factory stocks being sustained on a conservative working basis with a reasonable margin of safety. The month's decline in spot prices was very considerable, opening at 17½ cents on the first and closing on the thirtieth at 16¼ cents.

December was, if anything, quieter than any of the preceding months, being practically without buying interest because manufacturers were sufficiently stocked for current needs and willing to postpone their interest in futures while waiting for the outlook for 1930 to become more apparent. On December 23 the record low of 15.1 cents for spot ribs was reached. The closing price on December 31 recovered to 16½ cents.

New York Outside Market—Low and High Spot Rubber Prices—1921-1929

Prices in Cents Per Pound

	January	February	March	April	May	June	July	August	September	October	November	December
1921, First latex crepe.....	19 1/2 @ 21 1/4	19 1/2 @ 21 1/4	18 1/2 @ 20 1/4	18 1/2 @ 20 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4
1921, Ribbed smoked sheet.....	19 1/2 @ 21 1/4	19 1/2 @ 21 1/4	18 1/2 @ 20 1/4	18 1/2 @ 20 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4
1921, Unvulcanized sheet.....	19 1/2 @ 21 1/4	19 1/2 @ 21 1/4	18 1/2 @ 20 1/4	18 1/2 @ 20 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4
1921, Unvulcanized coarse.....	19 1/2 @ 21 1/4	19 1/2 @ 21 1/4	18 1/2 @ 20 1/4	18 1/2 @ 20 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4
1922, First latex crepe.....	19 1/2 @ 21 1/4	19 1/2 @ 21 1/4	18 1/2 @ 20 1/4	18 1/2 @ 20 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4
1922, Ribbed smoked sheet.....	19 1/2 @ 21 1/4	19 1/2 @ 21 1/4	18 1/2 @ 20 1/4	18 1/2 @ 20 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4
1922, Unvulcanized sheet.....	19 1/2 @ 21 1/4	19 1/2 @ 21 1/4	18 1/2 @ 20 1/4	18 1/2 @ 20 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4
1922, Unvulcanized coarse.....	19 1/2 @ 21 1/4	19 1/2 @ 21 1/4	18 1/2 @ 20 1/4	18 1/2 @ 20 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4
1923, First latex crepe.....	19 1/2 @ 21 1/4	19 1/2 @ 21 1/4	18 1/2 @ 20 1/4	18 1/2 @ 20 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4
1923, Ribbed smoked sheet.....	19 1/2 @ 21 1/4	19 1/2 @ 21 1/4	18 1/2 @ 20 1/4	18 1/2 @ 20 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4
1923, Unvulcanized sheet.....	19 1/2 @ 21 1/4	19 1/2 @ 21 1/4	18 1/2 @ 20 1/4	18 1/2 @ 20 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4
1923, Unvulcanized coarse.....	19 1/2 @ 21 1/4	19 1/2 @ 21 1/4	18 1/2 @ 20 1/4	18 1/2 @ 20 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4
1924, First latex crepe.....	19 1/2 @ 21 1/4	19 1/2 @ 21 1/4	18 1/2 @ 20 1/4	18 1/2 @ 20 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4
1924, Ribbed smoked sheet.....	19 1/2 @ 21 1/4	19 1/2 @ 21 1/4	18 1/2 @ 20 1/4	18 1/2 @ 20 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4
1924, Unvulcanized sheet.....	19 1/2 @ 21 1/4	19 1/2 @ 21 1/4	18 1/2 @ 20 1/4	18 1/2 @ 20 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4
1924, Unvulcanized coarse.....	19 1/2 @ 21 1/4	19 1/2 @ 21 1/4	18 1/2 @ 20 1/4	18 1/2 @ 20 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4
1925, First latex crepe.....	19 1/2 @ 21 1/4	19 1/2 @ 21 1/4	18 1/2 @ 20 1/4	18 1/2 @ 20 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4
1925, Ribbed smoked sheet.....	19 1/2 @ 21 1/4	19 1/2 @ 21 1/4	18 1/2 @ 20 1/4	18 1/2 @ 20 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4
1925, Unvulcanized sheet.....	19 1/2 @ 21 1/4	19 1/2 @ 21 1/4	18 1/2 @ 20 1/4	18 1/2 @ 20 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4
1925, Unvulcanized coarse.....	19 1/2 @ 21 1/4	19 1/2 @ 21 1/4	18 1/2 @ 20 1/4	18 1/2 @ 20 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4
1926, First latex crepe.....	19 1/2 @ 21 1/4	19 1/2 @ 21 1/4	18 1/2 @ 20 1/4	18 1/2 @ 20 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4
1926, Ribbed smoked sheet.....	19 1/2 @ 21 1/4	19 1/2 @ 21 1/4	18 1/2 @ 20 1/4	18 1/2 @ 20 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4
1926, Unvulcanized sheet.....	19 1/2 @ 21 1/4	19 1/2 @ 21 1/4	18 1/2 @ 20 1/4	18 1/2 @ 20 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4
1926, Unvulcanized coarse.....	19 1/2 @ 21 1/4	19 1/2 @ 21 1/4	18 1/2 @ 20 1/4	18 1/2 @ 20 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4
1927, First latex crepe.....	19 1/2 @ 21 1/4	19 1/2 @ 21 1/4	18 1/2 @ 20 1/4	18 1/2 @ 20 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4
1927, Ribbed smoked sheet.....	19 1/2 @ 21 1/4	19 1/2 @ 21 1/4	18 1/2 @ 20 1/4	18 1/2 @ 20 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4
1927, Unvulcanized sheet.....	19 1/2 @ 21 1/4	19 1/2 @ 21 1/4	18 1/2 @ 20 1/4	18 1/2 @ 20 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4
1927, Unvulcanized coarse.....	19 1/2 @ 21 1/4	19 1/2 @ 21 1/4	18 1/2 @ 20 1/4	18 1/2 @ 20 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4
1928, First latex crepe.....	19 1/2 @ 21 1/4	19 1/2 @ 21 1/4	18 1/2 @ 20 1/4	18 1/2 @ 20 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4
1928, Ribbed smoked sheet.....	19 1/2 @ 21 1/4	19 1/2 @ 21 1/4	18 1/2 @ 20 1/4	18 1/2 @ 20 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4
1928, Unvulcanized sheet.....	19 1/2 @ 21 1/4	19 1/2 @ 21 1/4	18 1/2 @ 20 1/4	18 1/2 @ 20 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4
1928, Unvulcanized coarse.....	19 1/2 @ 21 1/4	19 1/2 @ 21 1/4	18 1/2 @ 20 1/4	18 1/2 @ 20 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4
1929, First latex crepe.....	19 1/2 @ 21 1/4	19 1/2 @ 21 1/4	18 1/2 @ 20 1/4	18 1/2 @ 20 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4
1929, Ribbed smoked sheet.....	19 1/2 @ 21 1/4	19 1/2 @ 21 1/4	18 1/2 @ 20 1/4	18 1/2 @ 20 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4
1929, Unvulcanized sheet.....	19 1/2 @ 21 1/4	19 1/2 @ 21 1/4	18 1/2 @ 20 1/4	18 1/2 @ 20 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4
1929, Unvulcanized coarse.....	19 1/2 @ 21 1/4	19 1/2 @ 21 1/4	18 1/2 @ 20 1/4	18 1/2 @ 20 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4	17 1/2 @ 19 1/4

Plantation Rubber Acreage

In Trade Information Bulletin No. 603, published March, 1929, the Rubber Division, Department of Commerce, Washington, D. C., included a table showing estimated acreage planted to rubber in the Middle East to the end of 1927. More accurate information on Malaya is now available through Trade Commissioner Bliss, Singapore, and later trade association figures have been published for Dutch estates; while the estimates of acreage in Siam and Indo-China have been revised on the basis of reports submitted by Trade Commissioner Renshaw while at Singapore. In the following table the statistics are brought up to date as revised. All the estimates are believed to be reasonably close to but perhaps lower than the actual planted acreages; other estimates for Dutch Native acreage vary between 1,000,000 and 2,200,000 acres at the end of 1928.

YEAR END* ACREAGE UNDER RUBBER IN BRITISH MALAYA

(Acreage figures in thousands, 000 omitted)

	F.M.S.	S.S.	Johore	Unfederated States	Total
1923	1,258	303	477	294	2,332
1924	1,274	307	487	301	2,369
1925	1,294	312	499	312	2,417
1926	1,338	325	527	335	2,525
1927	1,395	331	558	361	2,645
1928	1,433	337	580	378	2,728

* Estimates of American Trade Commissioner, Singapore, October, 1929.

YEAR END ACREAGE UNDER RUBBER IN MIDDLE EAST

(Acreage figures in thousands, 000 omitted)

	1923	1924	1925	1926	1927	1928
Malaya*	2,332	2,369	2,417	2,525	2,645	2,728
Ceylon	446	461	467	486	495	525
India†	128	129	133	139	147	153
Br. Borneo†	148	154	167	195	206	210
Indo-China	86	95	115	155	205	225
Dutch Estates†	950	979	1,025	1,102	1,199	1,299
Native†	615	675	825	1,050	1,300	1,400
Siam	60	65	80	110	140	160
Totals	4,765	4,927	5,229	5,762	6,337	6,700

* Ceylon figures from Rubber Controller; 1927 figures reported by Rubber Growers Association as 530,000, or much higher than above.

† Rubber Division estimates for British Borneo, Indo-China, Dutch Native, and Siam.

Reported Rubber Stocks

Long Tons—1929

Producing Centers	July	Aug.	Sept.	Oct.	Nov.	Dec.
Singapore	28,950	26,496	28,248	28,582	30,913	35,548
Penang	6,523	6,628	6,043	6,365	3,237	3,103
Para	3,658	3,678	3,462	2,955	3,237	3,103
Totals	39,131	36,802	37,753	37,902	34,150	38,651
Manufacturing Centers						
London	30,080	35,642	42,188	47,803	52,454	52,454
Liverpool	4,661	7,507	10,026	13,903	17,655	17,655
Amsterdam	1,569	1,867	2,203	2,222	2,222	2,222
United States	95,536	90,769	84,362	88,483	92,219	105,138
Plantations afloat* ..	83,412	87,219	94,252	86,895	86,895	86,895
Totals	215,258	223,004	233,031	239,306	244,400	244,400
Grand totals	254,389	259,806	270,784	277,208	277,208	277,208

* W. H. Rickinson & Son, The World's Rubber Position.

Compiled by Rubber Division, Department of Commerce, Washington, D. C.

London Stocks, November, 1929

Imports, Consumption, and Stocks

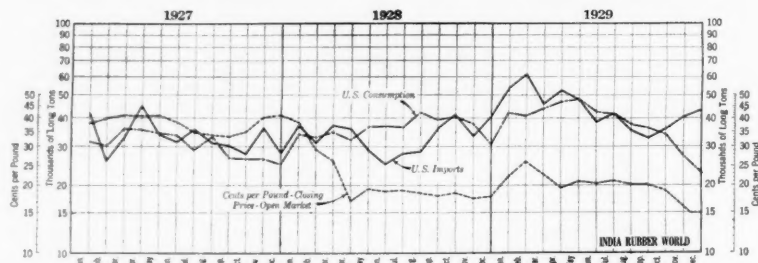
THE graphs of imports, consumption, and stocks are charted from official United States statistics by months for the years 1927, 1928, and 1929. The price graph represents official closing prices of the Rubber Trade Association of New York for spot ribbed smoked sheet rubber, covering the same periods of time.

Imports for December were 43,542 tons or 2,445 tons more than the November figures. Consumption for December was 23,273 tons, or 4,082 less than in November. December stocks on hand were reported as 140,472 tons, stocks afloat as 67,009 tons.

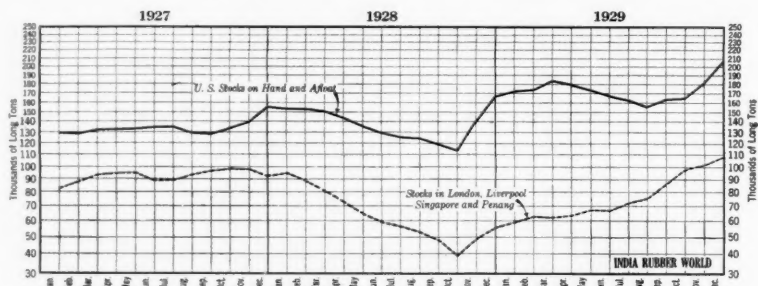
Unofficial statistical estimates for January are imports 42,000 tons, consumption 31,000 tons, and stocks afloat 62,000 tons, U. S. stocks on hand 148,000 tons.

London stocks between December 21 and January 25 steadily increased. The weekly record is as follows: December 28, 54,260 tons; January 4, 56,616 tons; January 11, 58,990 tons; January 18, 59,607 tons; January 25, 59,984 tons.

The weekly records of stocks at Liverpool on the same dates are as follows: December 28, 19,059 tons; January 4, 19,438 tons; January 11, 19,640 tons; January 18, 19,515 tons; January 25, 20,063 tons.



United States Imports, Consumption, and Prices of Ribbed Smoked Sheets



United States, British and Malayan Rubber Stocks

United States Statistics of Rubber Imports, Consumption, and Stocks

Twelve Months	*Net Imports Tons	†Consumption Tons	‡Stocks on Hand Tons	§Stocks Afloat Tons	Total Domestic Stocks Tons	British and Malayan Stocks *London & Liverpool Tons	*Singapore & Penang Tons	Total Tons
1925	385,596	388,000	50,985	52,421	103,406	6,328	18,840	25,168
1926	399,972	366,000	72,510	51,238	123,748	51,320	26,443	77,763
1927	403,472	373,000	102,982	51,938	154,920	66,261	25,798	92,059
1928	407,572	437,000	73,554	92,037	165,591	22,603	32,905	55,508
1927								
January	42,107	31,694	82,923	47,020	129,943	57,065	25,440	82,505
February	26,312	30,306	78,929	48,542	127,471	61,170	26,766	87,936
March	33,207	36,343	75,793	55,561	131,354	65,634	27,843	93,477
April	45,118	36,073	84,838	47,010	131,848	69,798	24,543	94,341
May	34,135	34,787	84,186	48,531	132,717	70,099	25,133	95,232
June	31,695	33,991	81,890	52,280	134,170	66,887	21,898	88,785
July	36,116	29,383	88,623	45,664	134,287	66,776	22,568	89,344
August	31,349	33,647	86,325	42,745	129,070	67,836	25,764	93,600
September	30,264	27,367	89,222	38,230	127,452	71,505	25,178	96,683
October	28,126	26,942	90,406	42,292	132,698	72,584	25,790	98,374
November	36,619	26,943	100,082	39,517	139,599	69,896	28,369	98,265
December	28,424	25,524	102,982	51,938	154,920	66,261	25,798	92,059
1928								
January	37,552	34,065	106,469	46,441	152,910	68,660	25,868	94,528
February	31,415	33,370	104,514	48,044	152,558	65,307	22,867	88,174
March	37,468	35,335	106,647	43,378	150,025	60,405	20,538	80,943
April	36,175	32,450	110,372	32,783	143,155	55,910	16,946	72,856
May	29,112	36,965	102,519	33,145	135,664	46,882	17,687	64,569
June	25,567	37,305	90,781	38,392	129,173	41,091	18,207	59,298
July	28,362	37,040	82,103	42,943	125,046	37,818	18,663	56,481
August	28,827	42,505	68,425	54,904	123,329	34,364	18,971	53,335
September	36,800	39,490	65,735	52,692	118,427	33,673	14,898	48,571
October	41,667	40,455	66,947	45,646	112,593	26,600	12,149	38,749
November	33,846	37,095	63,698	75,502	139,200	19,988	29,188	49,176
December	40,781	30,925	73,554	92,037	165,591	22,603	32,905	55,508
1929								
January	53,992	42,530	84,946	92,480	177,426	28,966	29,617	58,583
February	61,331	41,137	105,140	74,891	180,031	29,659	32,373	62,032
March	46,391	44,238	107,293	75,848	183,141	32,540	29,437	61,977
April	52,520	47,000	112,813	66,119	178,932	35,958	27,339	63,297
May	48,475	48,692	112,596	59,526	172,122	35,828	31,932	67,760
June	38,821	42,753	108,664	57,948	166,612	35,375	31,861	67,236
July	41,114	41,069	108,709	52,078	160,787	35,599	35,473	71,072
August	35,397	37,854	106,252	48,434	154,686	43,165	33,124	76,289
September	32,912	34,325	104,839	58,954	163,793	52,214	34,291	86,505
October	36,040	34,418	106,461	61,140	167,601	61,706	34,947	96,653
November	41,097	27,355	120,203	62,268	182,471	70,109	30,913	101,922
December	43,542	23,273	140,472	67,009	207,481	73,312	35,548	108,860

* Official statistics. † Census Bureau figure 1925, Rubber Division survey figures other years; Rubber Manufacturers Association figures raised (from estimated 91 per cent) for months of 1929. ‡ R. M. A. figures 1925 and 1926, calculated on basis of consumption and net imports thereafter. § R. M. A. figures 1925, calculated on basis official "rubber invoiced" statistics thereafter. ¶ Provisional figure.

Compiled by Rubber Division, Department of Commerce, Washington, D. C.

MARKET REVIEWS

CRUDE RUBBER

New York Exchange

CRUDE rubber prices lost more than a cent a pound during the first ten days of January; the four more advanced positions selling below the 15-cent level and at the same time the London market was reported to be at the lowest for eight years. The report of the Rubber Manufacturers' Association for the end of the year offers information accounting for the trend of prices.

Stocks in the United States on December 31, 1929, 105,120 tons compared with 66,160 tons a year ago; London and Liverpool stocks, 73,319 tons against 22,581 tons on December 31, 1928. The peak of domestic consumption was reached in May, 1929, when reports indicated a use of 49,233 tons. But from that month a steady falling off has followed until the low point of the year was reached in December, when 23,530 tons were consumed, against receipts of 43,542.

In regard to world production and consumption the estimates of the Department of Agriculture too are interesting. They place production at 855,500 tons against consumption of 785,000 tons as compared with last year's figures of 658,000 tons and 680,700 tons respectively. These figures in a good measure aid in accounting for the present unfavorable price situation.

In a review of the crude rubber situation the F. R. Henderson Corporation comments, "During the past year 196,486 lots, equivalent to 491,215 tons, changed hands on the Exchange, which figures com-

RUBBER EXCHANGE ACTIVITIES					
Transactions					
Week Ended	Contracts Sold		Trans- ferable Notices	Week- End Tone	
	Number	Tons			
Dec. 28.	1,280	3,200.	195	Quiet & steady	
Jan. 4...	1,540	3,850.	178	Steady	
Jan. 11..	2,569	6,422.5	124	Firm	
Jan. 18..	2,889	7,222.5	132	Steady	
Jan. 25..	2,189	5,472.5	71	Quiet & steady	
Total	10,467	26,167.5	700		

pare with 167,369 lots or 418,422½ tons in 1928. The volume of trading increased by over 17 per cent during 1929. The highest price for the year was 28.20 cents for the January position, on February 25, and the lowest was 15.10 cents for the December position on December 23."

Exports of rubber to the United States fell off at the end of December, and London estimates the production for 1930 at approximately 10 per cent under the preceding year.

Harriss & Vose says, "If this is correct, we can look forward to about 800,000 tons of eastern rubber for next year, and it only remains to be seen whether consumption requirements will run that high.

"Domestic takings for 1929, they tell us, will show an increase of 7 per cent over those of 1928, while foreign consumption increased 28 per cent within the same period. Adding but 14 per cent increase would predict foreign takings in 1930 of 356,000 tons. While domestic consumption

at the smaller rate of increase would amount to 502,900 tons during 1930.

"Adding these amounts gives an estimated world absorption for 1930 of 858,000 tons. This compares with an estimated world production of 800,000 and an actual production for 1929 of about 850,000 tons. Belief in the increased absorption is based upon a normal industrial growth; while grounds for the decreased output are found largely in the pressure of the price itself, and in the belief that Eastern producers are not 'all asleep at the switch,' and so inclined to continue heavy tappings at a loss."

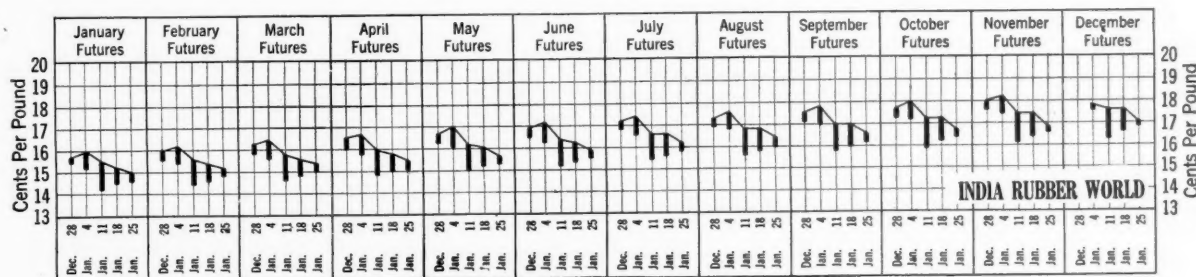
The Rubber Exchange on January 14 announced a cablegram from Amsterdam saying that crude rubber producers in the Dutch East Indies had formulated a new restriction plan calling for a reduction of 10 to 20 per cent in the outputs of both native and European producers.

"The committee formed in cooperation with British rubber producers will leave for Java to propose restriction of tapping rubber trees, in an effort to alleviate the present oversupply. Under the plan, the European producers will deposit 20 florins per ton and the native, or uncontrolled producers, 2 cents per kilogram, which will be forfeited in the event of nonfulfillment of obligations."

A cablegram to the Exchange reported that voluntary restriction of production had been adopted by one large plantation interest in the Far East and that it would curtail production in 1930 by 10 per cent.

The letter ended, "The matter has been discussed by both English and Dutch units similarly concerned, and the directors have

New York Rubber Exchange Clearing House Prices—High and Low Weekly Changes on "A" Contracts for Monthly Futures



The Rubber Exchange of New York, Inc.

DAILY MARKET FUTURES—RIBBED SMOKED SHEETS—CLEARING HOUSE PRICES—CENTS PER POUND—"A" CONTRACTS

December, 1929										January, 1930																				
Positions	23	24	25*	26	27	28	30	31	1*	2	3	4	6	7	8	9	10	11	13	14	15	16	17	18	20	21	22	23	24	25
1929	15.1	15.4	15.7	15.6	15.6	15.8	16.0	15.5	15.3	15.2	15.5	15.0	14.8	14.6	14.2	14.3	14.7	14.5	14.5	14.7	15.2	15.1	14.6	14.7	14.7	15.0	15.0	15.0	15.0	15.0
Dec.	15.1	15.4	15.7	15.6	15.6	15.8	16.0	15.5	15.3	15.2	15.5	15.0	14.8	14.6	14.2	14.3	14.7	14.5	14.5	14.7	15.2	15.1	14.6	14.7	14.7	15.0	15.0	15.0	15.0	15.0
1930	15.4	15.5	15.7	15.6	15.6	15.8	16.0	15.5	15.3	15.2	15.5	15.0	14.8	14.6	14.2	14.3	14.7	14.5	14.5	14.7	15.2	15.1	14.6	14.7	14.7	15.0	15.0	15.0	15.0	15.0
Jan.	15.4	15.5	15.7	15.6	15.6	15.8	16.0	15.5	15.3	15.2	15.5	15.0	14.8	14.6	14.2	14.3	14.7	14.5	14.5	14.7	15.2	15.1	14.6	14.7	14.7	15.0	15.0	15.0	15.0	15.0
Feb.	15.6	15.7	15.8	15.8	15.9	16.1	16.2	16.0	15.8	15.6	15.4	15.2	15.0	14.8	14.4	14.5	14.8	14.7	14.6	14.9	15.4	15.4	14.8	14.9	14.9	15.1	15.2	15.1	15.2	15.1
Mar.	15.8	16.0	16.1	16.1	16.2	16.4	16.5	16.0	15.8	15.6	15.4	15.2	15.0	14.6	14.7	15.0	14.9	14.8	15.1	15.6	15.6	15.1	15.2	15.0	15.2	15.0	15.2	15.4	15.3	
Apr.	16.0	16.2	16.3	16.3	16.4	16.6	16.7	16.4	16.2	16.1	16.2	15.8	15.6	15.5	15.0	15.1	15.4	15.3	15.2	15.2	15.6	16.1	16.1	15.4	15.6	15.3	15.7	15.7	15.7	
May	16.3	16.4	16.7	16.6	16.6	16.8	17.0	16.6	16.4	16.3	16.4	16.0	15.8	15.6	15.2	15.2	15.6	15.5	15.4	15.7	16.3	16.3	15.6	15.8	15.5	15.8	15.5	15.8	15.9	
June	16.5	16.6	16.9	16.8	16.8	17.0	17.2	16.8	16.6	16.6	16.6	16.2	16.0	15.8	15.4	15.4	15.8	15.6	15.6	16.0	16.6	16.6	16.5	15.9	16.0	15.8	16.0	16.2	16.1	
July	16.8	16.9	17.2	17.0	17.1	17.2	17.4	17.0	16.8	16.8	16.8	16.4	16.2	16.0	15.6	15.6	16.0	15.8	15.8	16.1	16.8	16.6	16.1	16.2	16.0	16.2	16.4	16.3	16.3	
Aug.	16.9	17.0	17.3	17.1	17.2	17.4	17.6	17.2	17.1	17.0	17.0	16.6	16.4	16.2	15.8	15.9	16.3	16.0	16.0	16.3	17.0	16.8	16.3	16.4	16.2	16.5	16.6	16.5	16.5	
Sept.	17.1	17.2	17.5	17.3	17.4	17.6	17.8	17.4	17.3	17.2	17.2	16.8	16.6	16.4	16.2	16.0	16.4	16.2	16.2	16.4	17.2	17.0	16.5	16.6	16.4	16.6	16.7	16.6	16.6	
Oct.	17.3	17.4	17.7	17.5	17.6	17.8	18.0	17.6	17.5	17.4	17.4	17.0	16.8	16.6	16.1	16.2	16.6	16.4	16.4	16.6	17.4	17.2	16.6	16.8	16.6	16.8	16.6	16.8	16.7	
Nov.	17.6	17.7	18.0	17.8	17.9	18.0	18.2	17.8	17.7	17.6	17.6	17.2	17.0	16.8	16.3	16.4	16.8	16.5	16.6	16.8	17.6	17.4	16.8	17.0	16.8	17.0	16.8	17.0	16.9	
Dec.	17.6	17.7	18.0	17.8	17.9	18.0	18.2	17.8	17.7	17.6	17.6	17.2	17.0	16.8	16.3	16.4	16.8	16.5	16.6	16.8	17.6	17.4	16.8	17.0	16.8	17.0	16.8	17.0	16.9	

* Holiday.

reason to think that other companies, in their own interests, will adopt a like policy."

Of the automobile industry, the largest consumer of rubber, Alfred Reeves, general manager of the National Chamber of Commerce, says in the *New York Sun*, "The coming twelve months should be one of the best years in automobile history. The New York Automobile Show is the 'kick off' for 1930 business. Since 1920 there have been but five years out of the ten when production exceeded four million—the years 1923, 1925, 1926, 1928, and 1929, with an estimated production of 4,800,000 cars, a record for all time. There are 25,000,000 motor vehicles in use, which calls for a replacement of around 2,750,000 cars, for we must not forget that replacement now has to do with years of heavy production."

The week ended January 4 was without news of constructive nature. The latter part of December saw rubber prices at new low levels, and after the recovery made the last days of the year the market again settled to prices lower still. Trading was somewhat more active with an average daily turnover of 853.5 tons. Prices for the week ended January 4:

Position	High	Low	Close	Previous Week's Close
Jan.	16.10	15.30	15.40	15.70
Feb.	16.20	15.50	15.50	15.80
March	16.60	15.80	15.80	16.10
May	17.00	16.20	16.30	16.60
July	17.50	16.60	16.70	17.00
Sept.	17.90	17.00	17.10	17.40
Oct.	18.00	17.30	17.30	17.50

During the second week the downward movement became more pronounced and new low prices were recorded in the history of the local Rubber Exchange. Reports of the heavy shipments of rubber from the Far East, with arrivals estimated at 41,900 tons, together with the low

figures for domestic consumption for December were factors of most influence in producing the bearish sentiment of the market.

Shaw & Smythe, London rubber brokers, stated in their report of January 10:

"An increase of 2,735 tons in London stocks, continued heavy shipments from the East, and fears of reduced consumption in the United States for December have developed a feeling of uneasiness in the trade, and the wave of pessimism is spreading. From the data to hand it is evident that heavy overproduction is taking place, and in many quarters it is thought that only a further severe fall in values will force those engaged in the production of rubber to realize the seriousness of the situation, and the folly of heavy production during a period of financial uncertainty such as is being experienced at present."

Prices for the week ended January 11:

Position	High	Low	Close	Previous Week's Close
Jan.	15.50	14.20	14.30	15.40
Feb.	15.60	14.40	14.40	15.50
March	15.90	14.60	14.60	15.80
May	16.40	15.00	15.00	16.30
July	16.80	15.40	15.50	16.70
Sept.	17.20	15.80	15.80	17.10
Oct.	17.30	15.90	16.00	17.30

During the week ended January 18 trading was somewhat more active with an average daily turnover of 1,152 tons. After opening unchanged to 10 points advance from the record low prices of the previous week the market advanced sharply at its close. Further activity on the part of the Dutch rubber growers in their efforts to secure restriction of the far eastern output tended to revive speculative buying. The March position which sold at 14.40 on January 11 reached a high of 16.00 on January 17, receding to 15.60 at the close. Prices for the week ended January 18:

Position	High	Low	Close	Previous Week's Close
Jan.	15.40	14.30	15.20	14.30
Feb.	15.40	14.50	15.40	14.40
March	16.00	14.40	15.60	14.60
May	16.40	14.80	16.20	15.00
July	16.90	15.20	16.60	15.50
Sept.	17.20	15.70	17.00	15.80
Oct.	17.40	15.80	17.20	16.00

During the last week the market was quieter with an average daily turnover of 975 tons. Large factors are reported to have sold on the advance of the previous week, and this, together with the failure of aggressive new buying to be sustained and the absence of any important factory interest at the advance, has since caused a gradual sagging of prices to around the levels prevailing a week ago. Prices for the week ended January 25:

Position	High	Low	Close	Previous Week's Close
Jan.	15.30	14.60	15.20	15.20
Feb.	15.40	14.80	15.20	15.40
March	15.60	15.00	15.40	15.60
May	16.10	15.30	15.80	16.20
July	16.50	15.80	16.20	16.60
Sept.	16.90	16.20	16.60	17.00
Oct.	17.00	16.40	16.70	17.20

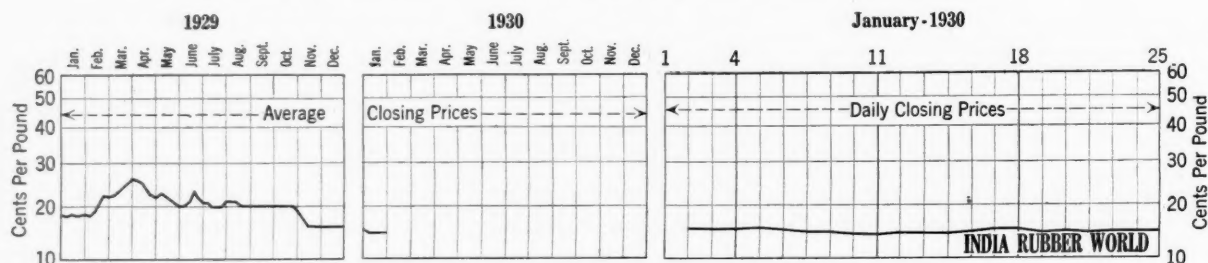
New York Outside Market

The consuming demand for actual rubber in January was somewhat better than for December. Manufacturers of rubber products are operating on about the same basis as last fall. Tire production is seasonal and gaged to conform closely to new equipment needs of the automobile output.

As regards crude rubber supply, last year's production exceeded general expectation. The present market is burdened by this increased production resulting from the incentive of 25- to 30-cent rubber prevailing last spring.

Another source of production stimulation was the phenomenal production of tires and tubes. This winter's low price

New York Outside Market—Spot Closing Prices Ribbed Smoked Sheets



New York Outside Market—Spot Closing Rubber Prices—Cents Per Pound

	December, 1929											January, 1930																	
	23	24	25*	26	27	28	29	30	31	1*	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18		
Ribbed smoked sheet...	15½	15½	16	15¾	15¾	15¾	16½	16½	16½	15¾	15¾	15¾	15¾	15¾	15¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾		
No. 1 thin latex crepe...															16¾	15¾	15¾	15¾	15	15½	15½	15½	15½	15½	15½	16	15¾		
No. 1 thick latex crepe...															16¾	15¾	15¾	15¾	15	14¾	14¾	14¾	15	15	15½	15½	15¾		
No. 1 brown crepe...															13¾	13¾	13¾	13¾	13¾	12¾	12¾	13¾	13¾	13¾	13¾	13¾	13¾		
No. 2 brown crepe...															13¾	13¾	13¾	13¾	13	12¾	12¾	12¾	12¾	12¾	13	13¾	13¾		
No. 2 Amber...	13¾	13¾		14¾	13¾	13¾	14	14¾		14¾	13¾	13¾	13¾	13¾	13¾	13¾	13¾	13¾	13	13¾	13¾	13¾	13¾	13¾	13¾	13¾	13¾		
No. 3 Amber...	13¾	13¾		13¾	13¾	13¾	13¾	13¾		13¾	13¾	13¾	13¾	13¾	13¾	13¾	13¾	13	12¾	12¾	12¾	12¾	12¾	12¾	13¾	13¾	13¾		
No. 4 Amber...	12¾	12¾		13¾	13¾	13¾	13¾	13¾		13¾	12¾	12¾	12¾	13	12¾	12¾	12¾	12¾	11¾	11¾	12¾	12¾	12¾	12¾	12¾	12¾	12¾		
Rolled brown...	9¾	9¾		9¾	9¾	9¾	10¾	10		9¾	9¾	9¾	9¾	9¾	9¾	9¾	9¾	9¾	8¾	8¾	9¾	8¾	8¾	8¾	9¾	9¾	9¾		

* Holiday.

level may serve to curtail plantation output six months from now.

Producers, dealers, and consumers of crude rubber are all actuated by extreme caution in the present market. English and Dutch planting interests are endeavoring to formulate some effective plan to regulate prices on a profitable basis that will be more responsive to consuming demand than was the Stevenson scheme. Restriction is not again likely to receive government sanction, but must provide effective control of native production besides allowing for smuggling native rubber to the extent of about 50,000 tons per year. Under present conditions native rubber is a serious menace to the prosperity of estate rubber. Competent observers are of the opinion that native successful competition lies in attaining a sustained output of 1,000 pounds per acre by careful seed selection and bud grafting methods. Plantations that do not follow this course are due for abandonment and reversion to jungle.

The week ended December 28 was broken up by the Christmas holiday. The

market was bearish and consumers not interested, being engaged with the work of inventory. The week closed with prices somewhat firmer than at the beginning of the week.

Spot	Dec. 28	Month Ago	Year Ago
Crepe	16 3/4	17	19
Ribs	15 3/4	16	18 1/2
Upriver fine ...	16	16 1/2	19 1/4

The January market exhibited a steady slow settlement of prices to new low levels with one feeble ineffectual rally. The week ended January 4 represented virtually but three days' trading. During this period important consumers showed interest in near and distant positions. On January 2 spot ribs closed at 15 3/4 cents but turned weak and dropped to 15 1/2 cents at the end of the week when comparative prices were as follows:

Spot	Jan. 4	Month Ago	Year Ago
Crepe	16 3/4	17 1/4	18 3/4
Ribs	15 1/2	16 1/4	18
Upriver fine ...	16 1/2	16 1/2	19 3/4

Market interest improved in the week terminated January 11, but prices were not sustained. On Monday actuals were firmer but remained unchanged despite

their advance in the Exchange market. Factories were looking for cheaper prices. Spot buyers held back and looked for lower prices. Some manufacturers on the decline were asking for postponement of January deliveries and the first quarter. The auto trade was marking time, and the low prices did not tempt consumers. Comparative prices at the end of the week were:

Spot	Jan. 11	Month Ago	Year Ago
Crepe	15 3/4	17 3/4	20 1/4
Ribs	14 3/4	16 1/2	19 1/2
Upriver fine ...	16	16 1/4	21 1/4

During the week ended January 18 prices were firmer in sympathy with those on the Exchange. Factory interest became more evident at bids 1/4-cent under the market. Prices stiffened as the week progressed, and the Far East increased its offerings. Actuals were practically at a standstill as the price of ribs advanced 1/4-cent and shipment demand in the local market expanded. The week closed with the market quiet and final asking prices 1/2-cent lower in sympathy with the decline on the Exchange. Compar-

New York Quotations

Following are the New York outside market rubber quotations for one year ago, one month ago, and January 27, the current date

Plantation Hevea	January 26, 1929	December 26, 1929	January 27, 1930	South American	January 26, 1929	December 26, 1929	January 27, 1930
Rubber latex (Hevea) .. gal. .	\$1.40 @	\$1.25 @	\$1.25 @	PARAS—Continued			
CREPE				Peruvian, fine	\$0.27 1/2 @	\$0.15 1/2 @	\$0.15 1/2 @
First latex, spot .....	.22 1/2 @	.16 1/2 @ .16 3/4	.16 @	Tapajos, fine .....	.22 1/2 @	.15 1/2 @	.15 1/2 @
January-March .....	.22 1/2 @	.16 3/4 @ .16 3/4	.16 3/4 @	CAUCHO			
April-June .....	.22 3/4 @	.17 1/2 @ .17 3/4	.16 3/4 @	Upper cauchó ball .....	.15 @	.08 3/4 @	.08 @
July-September .....	.23 @	.17 1/2 @ .17 3/4	.16 3/4 @	Upper cauchó ball .....	.22 @	*.14 3/4 @	*.14 3/4 @
Off latex, spot .....	.22 1/2 @	.15 3/4 @ .16	.15 1/2 @	Lower cauchó ball .....	.14 @	.07 1/2 @	.06 1/2 @
"B" Blanket, spot .....	.20 1/2 @	.13 3/4 @ .14	.13 3/4 @	Maniçobas			
January-March .....	.20 1/2 @	.13 3/4 @ .14	.14 @	Ceará negro heads	†.18 @	†.19 @	†.19 @
April-June .....	.21 @	.14 1/2 @ .14 3/4	.14 1/2 @	Ceará scrap	†.10 @	†.11 @	†.11 @
July-September .....	.21 1/2 @	.15 @ .15	.15 @	Manicoba, 30% guaranteed	†.20 @	†.21 @	†.21 @
"C" Blanket, spot .....	.20 3/4 @	.13 1/4 @ .13 3/4	.13 1/4 @	Mangabiera, thin sheet	†.20 @	†.21 @	†.21 @
Brown No. 1 .....	.20 3/4 @	.13 3/4 @ .13 3/4	.13 3/4 @	Centrals			
Brown No. 2 .....	.20 @	.13 1/4 @ .13 1/2	.13 1/4 @	Central scrap .....	.13 1/2 @ .15	.07 @ .07 1/2	.07 @ .07 1/2
Brown, roll .....	.16 1/2 @	.09 1/2 @ .10	.09 1/2 @	Corinto scrap .....	.07 @	.07 @ .07 1/2	.07 @ .07 1/2
Sheet				Esmeralda sausage .....	.13 1/2 @ .15	.07 @	.07 @ .07 1/2
Ribbed, smoked, spot .....	.22 @	.15 1/2 @ .15 3/4	.15 1/2 @	Guayule			
January-March .....	.22 1/4 @	.15 3/4 @ .15 3/4	.15 3/4 @	Duro, washed and dried ...	.17 1/2 @	.17 @	.17 @
April-June .....	.23 @	.16 1/2 @ .16 3/4	.16 @	Ampar .....	.18 1/2 @	.18 @	.18 @
July-September .....	.23 1/4 @	.16 3/4 @	.16 1/2 @	Gutta Percha			
East Indian				Gutta Siak .....	.20 @ .22	.14 1/2 @ .15 1/2	.16 1/2 @ .17
PONTIANAK				Gutta Sob .....	.30 @ .32	.20 @ .22	.27 @
Banjermasin .....	.10 @ .12	.08 1/2 @	.08 @	Red Macassar	2.90 @	2.30 @ 2.50	2.25 @ 2.50
Pressed block .....	.18 @ .19	.14 1/4 @	.14 1/2 @ .15	Balata			
Sarawak	@	.08 3/4 @	.08 @	Block, Ciudad Bolivar ...	.50 @ .51	†.41 @	.43 @
South American				Colombia .....	.46 @ .47	†.39 @	.36 @
PARAS				Manaos block .....	.53 @ .56	.48 @	.43 @
Upriver, fine .....	.23 1/2 @	.16 1/4 @	.16 1/4 @	Panama .....	.46 @ .47	.39 @	.39 @
Upriver, fine	*.29 @	*.23 1/4 @	*.22 1/2 @	Surinam sheet .....	.49 @ .50	†.52 @	.52 @
Upriver, coarse .....	.15 @	.08 @	.08 1/2 @	Amber .....	.53 @ .54	†.54 1/2 @	.55 @
Upriver, coarse	*.22 @	*.14 1/4 @	*.14 1/2 @	Chicle			
Islands, fine .....	.22 @	.15 1/4 @	.15 1/4 @	Honduras	†.68 @	†.68 @	†.68 @
Islands, fine	*.28 1/2 @	*.22 3/4 @	*.22 @	Yucatan, fine	†.68 @	†.68 @	†.68 @
Acre, Bolivian, fine .....	.24 1/2 @	.16 1/2 @	.16 1/2 @	* Washed and dried crepe. Shipment from Brazil.			
Acre, Bolivian, fine	*.30 @	*.23 1/2 @	*.23 @	†Nominal. †Duty paid.			
Beni, Bolivian .....	.25 @	.16 3/4 @	.16 3/4 @				
Madeira, fine .....	.23 1/2 @	.16 3/4 @	.16 3/4 @				

New York Outside Market—Spot Closing Rubber Prices—Cents Per Pound

	20	21	22	23	24	25
Ribbed smoked sheet	14 3/4	14 3/4	14 3/4	15	15	15
No. 1 Thin latex crepe ..	15 3/4	15 1/2	15 1/2	15 1/2	15 1/2	15 1/2
No. 1 Thick latex crepe ..	15	15 1/4	15	15 1/4	15 1/4	15 1/4
No. 1 Brown crepe	13 1/2	13 1/2	13 1/2	13 3/4	13 3/4	13 3/4
No. 2 Brown crepe	13 1/2	13 1/4	13 1/4	13 3/4	13 3/4	13 3/4
No. 2 Amber	13 1/2	13 1/4	13 1/4	13 3/4	13 3/4	13 3/4
No. 3 Amber	13 1/4	13 1/4	13 1/4	13 3/4	13 3/4	13 3/4
No. 4 Amber	12 3/4	12 3/4	12 3/4	13	13	13 1/4
Rolled brown	9 1/2	9 1/2	9 1/2	9 1/2	9 1/2	9 1/2

Low and High New York Spot Prices

PLANTATIONS	1930*	January 1929	1928
Thin latex crepe ..	\$0.15 @ \$0.16 1/2	\$0.18 1/4 @ \$0.22 3/4	\$0.38 3/4 @ \$0.41 1/4
Smoked sheet, ribbed	.14 3/4 @ .15 1/4	.18 @ .22 3/4	.38 1/2 @ .41 1/2
PARAS			
Upriver fine .....	.15 3/4 @ .16 1/2	.19 1/4 @ .23 3/4	.29 3/4 @ .33 3/4
Upriver, coarse ..	.08 1/2 @ .08 1/2	.13 3/4 @ .15 1/2	.24 @ .26 1/4
Upper cauchó ball ..	.08 @ .08 1/4	.12 3/4 @ .15 1/2	.25 @ .27 1/2

* Figured to January 25, 1930.

tive closing prices at the end of the week were:

Spot	Jan. 18	Month Ago	Year Ago
Crepe	15 3/4	16 3/4	20 1/4
Ribs	15 3/4	16	20 1/4
Upriver fine....	16 1/4	16	21 1/4

In the market of the week ended January 25 manufacturers exhibited very little buying interest. On Monday the price of ribs dropped 3/4- to 3/4-cent, which raised some consumer interest, which improved on Tuesday when price stiffened slightly and became firm. Ambers and crepes were offered sparingly by the Far East. On Wednesday, however, actuals receded 3/4- to 3/4-cent, and consumers' interest in all grades became narrow and withdrew. The balance of the week was dull and uninteresting with little doing between dealers and manufacturers. Prices at the end of week were as follows:

Spot	Jan. 25	Month Ago	Year Ago
Crepe	15 3/4	16 1/4	22 1/4
Ribs	15	15 3/4	21 3/4
Upriver fine....	16 3/4	16	23 3/4

December Consumption and Stocks

Consumption of crude rubber of all classes by manufacturers in the United States in December is estimated at 23,531 long tons, according to statistics compiled by The Rubber Manufacturers Association. This compares with estimated consumption of 27,659 long tons in November and 31,232 long tons in December, 1928. Total consumption of crude rubber by American manufacturers for 1929 is estimated at 469,804 long tons. Consump-

tion for 1928 was 441,330 long tons.

The association estimates total domestic stocks of crude rubber on hand and in transit overland on December 31 at 105,137 long tons compared with 92,219 long tons as of November 30. Crude rubber afloat for United States ports on December 31 is estimated at 62,388 long tons as against 62,358 long tons on November 30.

RUBBER AFLOAT TO THE UNITED STATES

All figures in long tons.

Week Ended	British Malaya	Ceylon	Netherland East Indies	London and Liverpool	Total
Dec. 28..	4,943	364	1,856	5	7,168
1930:					
Jan. 4..	8,067	1,587	2,419	51	12,124
Jan. 11..	7,235	931	1,469	15	9,650
Jan. 18..	7,009	898	1,560	49	9,516
Jan. 25..	9,212	1,103	2,051	14	12,380

Industry and Trade

Automobiles

FURTHER sharp curtailment in automobile production occurred in December with an output of 125,000 cars and trucks, a drop of 45 per cent under November and 49 per cent under December last year. Production in 1929 reached a total of 5,622,000 or 1,021,000 greater than 1928, the previous record year. Attendance at the New York Automobile Show equaled that of last year, and the crowds manifested a real buying interest. New truck registrations in the United States during November continued to surpass all corresponding months of previous years, being the eleventh consecutive month this year to exceed the same month in prior years. New passenger car registrations in November, however, failed to equal November last year by 14 per cent, the first month of 1929 to fall below the corresponding month of previous years.

Foreign sales in November declined 22 per cent below October and 32 per cent below November last year, but the eleven months' total reached 969,000 or 25 per cent more than in same months of 1928.

Rubber

Consumption of crude rubber in December showed a decrease of 15 per cent under November and 25 per cent under December, 1928. Total consumption for 1929 was 6 per cent higher than 1928. Domestic stocks as of December 31 were 59 per cent higher than the same time a year ago. Preliminary data indicate that production of pneumatic casings for the past year will show a decrease of 6 per cent under 1928, whereas shipments of casings will be practically the same as 1928. Inventories of casings on December 31, 1929, were 7 per cent less than December 31, 1928. National Industrial Conference Board.

Netherlands East Indies Exports

	Long Tons		1929			
	Total Jan.-Sept.	1928	June	July	August	Sept.
Java and Madura.....	43,483	51,364	5,582	6,422	4,664	4,708
Sumatra East Coast....	58,343	64,504	6,693	7,192	7,298	7,517
Other N. E. I.*.....						
Atjeh	2,882	3,276	275	439	374	398
Riouw	7,212	8,040	869	1,102	716	735
Djambi	26,082	23,292	2,561	3,096	2,490	2,487
Palembang	13,940	17,424	1,973	2,497	1,463	1,541
Lampoung	2,291	2,467	285	335	286	188
Benkoelen	37	36	4	4	5	4
Sumatra West Coast ..	855	1,046	110	129	148	72
Tapanocli	4,245	4,818	522	529	485	428
Banka	556	797	84	114	29	30
Rilliton	73	104	14	14	15	7
W. Coast Borneo....	15,433	20,283	2,337	2,598	2,283	1,791
S. E. Borneo	19,239	22,759	2,359	3,421	2,578	2,431
Menado	159	154	18	17	13	32
Celebes	31	64	4	10	...	11
Amboino	22	20	1	2	3	3
Totals	93,057	104,580	11,416	14,367	10,888	10,158
Grand totals	194,883	220,448	23,691	27,921	22,850	22,383

*Including wet native rubber from which a deduction of approximately 33 1/4 per cent must be made in order to reduce to a dry basis.
Compiled by Rubber Division, Department of Commerce, Washington, D. C.

Ceylon Rubber Exports

January 1 to November 7, 1929

To	Tons
United Kingdom	15,468.34
Continent	6,794.13
Other countries in Europe	25.00
Australia	2,725.12
America	42,745.04
Egypt	8.00
Africa	6.62
India	65.55
China	2.00
Japan	341.44
Other countries in Asia	7.32
Total	68,188.56
For the same period last year.....	44,342.55

Annual Exports, 1921-1928

For the year	Tons
1928.....	57,825.48
1927.....	55,355.77
1926.....	58,799.56
1925.....	45,697.19
1924.....	37,351.13
1923.....	37,111.88
1922.....	47,367.14
1921.....	40,210.31

United States Crude and Waste Rubber Imports for 1929 by Months

	Plan-tations	Paras	Africans	Centrals	Guayule	Manicobas and Matto Grosso	Total		Balata	Miscellaneous	Waste
							1929	1928			
January	51,202	1,055	30	5	....	13	52,305	46,243	67	799	181
February	63,851	530	60	97	....	..	64,538	29,445	80	1,220	319
March	51,661	2,112	15	36	....	..	53,824	40,894	85	825	70
April	53,256	844	8	4	59	..	54,171	37,240	87	1,606	609
May	47,940	1,078	54	49	59	..	49,180	32,883	88	1,013	230
June	43,313	1,032	44	1	100	..	44,490	25,792	91	1,323	215
July	43,130	930	..	57	134	..	44,251	33,382	75	1,044	274
August	37,572	572	5	9	134	..	38,292	29,805	102	1,031	166
September	31,849	473	60	58	75	..	32,515	46,662	48	755	275
October	42,697	512	33	18	465	..	43,725	42,515	91	994	160
November	39,932	524	14	1	150	..	40,621	34,720	62	613	53
December	42,594	743	122	8	75	..	43,542	46,840	133	777	81
Total twelve months, 1929	548,997	10,405	445	343	1,251	13	561,454	.....	1,009	12,000	2,633
Total twelve months, 1928	429,191	12,050	1,258	557	3,364	1	446,421	.....	1,143	9,481	3,461

Compiled from Rubber Manufacturers Association statistics.

RECLAIMED RUBBER

THE output of reclaimed rubber in January was somewhat greater than in December, reflecting the improved consumption that began the second week of the new year. Notwithstanding the low price prevailing for crude rubber, the percentage of consumption of reclaim to crude advanced after the reduction in the price of crude that took place in November, but dropped sharply in December.

Reclaim is admitted to compounding formulae because of both economy and technical value. When its value is demonstrated on both these points, competition does not admit of its removal. In fact, the price of tire reclaim is now at a level at which it can displace mineral rubber and cheap fillers to a noticeable extent.

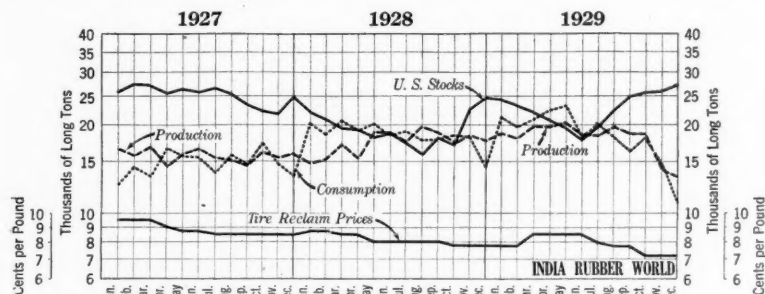
Reclaimers look for a progressive increase of demand for their products as spring activity in the rubber industry approaches, and the maintenance of the high ratio of reclaim consumption to crude.

The prices of several grades of reclaim have decreased slightly. The standard grades in common use such as black auto tires, unwashed shoe, and No. 2 tubes are unchanged.

New York Quotations

January 27, 1930

High Tensile	Spec. Grav.	Price Per Pound
Super-reclaim, black...	1.20	\$0.12 @ \$0.12 1/4
red	1.20	.11 @ .11 1/2



Production, Consumption, Stocks, and Prices of Tire Reclaim

United States Reclaimed Rubber Statistics—Long Tons

Year	Production	Consumption	Consumption Per Cent to Crude	United States Stocks*	Exports
1925	132,930	137,105	35.6	13,203	4,571
1926	180,582	164,500	45.9	23,218	5,391
1927	189,144	178,471	47.6	24,980	8,540
1928	208,516	223,000	50.4	24,785	9,577
1929					
January	16,526	12,374	39.3	25,903	726
February	15,860	14,424	47.8	27,291	671
March	16,788	13,528	37.4	27,124	785
April	14,483	16,677	46.5	25,712	899
May	16,159	15,754	46.1	26,419	934
June	16,652	15,547	46.0	25,811	683
July	15,488	13,842	47.4	26,599	674
August	15,109	15,836	47.3	25,157	629
September	14,392	14,790	54.3	23,429	538
October	16,127	17,292	64.5	22,176	571
November	15,477	14,876	55.5	21,728	700
December	16,083	13,431	52.7	24,980	730
1928					
January	14,862	20,140	58.5	21,941	887
February	15,291	18,670	55.4	20,848	813
March	17,069	20,680	57.9	19,558	879
April	15,393	19,280	58.8	19,283	810
May	18,945	20,215	54.1	18,137	889
June	18,781	18,140	48.2	18,709	350
July	17,278	19,070	51.0	17,305	986
August	19,049	17,890	41.7	15,881	909
September	18,693	17,795	44.6	17,991	809
October	17,182	18,420	45.1	17,026	842
November	18,245	18,380	49.1	22,399	736
December	17,728	14,320	45.9	24,785	673
1929					
January	16,685	21,068	49.1	24,394	941
February	18,094	19,829	47.7	23,305	1,028
March	19,984	20,867	46.7	22,076	1,344
April	19,899	22,435	47.3	20,680	1,498
May	20,385	23,176	47.1	19,479	1,299
June	18,416	18,141	42.0	17,980	961
July	18,387	20,236	48.7	19,679	1,202
August	19,787	18,230	47.6	22,309	860
September	18,660	16,416	47.2	24,984	657
October	18,698	18,024	51.8	25,474	830
November	14,363	14,742	53.4	26,080	1,232
December	13,429	11,089	47.1	27,464	869

*Stocks on hand the last of the month or year.
Compiled by Rubber Manufacturers Association.

Auto Tire	Spec. Grav.	Price Per Pound
Black	1.21	.07 @ .07 1/4
Black selected tires	1.18	.07 1/4 @ .07 1/2
Dark gray	1.35	.08 1/4 @ .09
Light gray	1.38	.09 1/4 @ .10 1/4
White	1.40	.11 1/4 @ .12

Shoe	Spec. Grav.	Price Per Pound
Unwashed	1.60	.07 @ .07 1/4
Washed	1.50	.09 1/4 @ .10

Tube	Spec. Grav.	Price Per Pound
No. 1	1.00	.12 @ .12 1/4
No. 2	1.10	.09 1/4 @ .10

Truck Tire	Spec. Grav.	Price Per Pound
Truck tire, heavy gravity	1.55	.07 @ .07 1/4
Truck tire, light gravity	1.40	.07 1/4 @ .07 1/2

Miscellaneous	Spec. Grav.	Price Per Pound
Red	1.35	.11 1/4 @ .12
Mechanical blends	1.60	.06 1/2 @ .07

Reclaim Consumption

Consumption of reclaimed rubber is estimated at 11,089 long tons for December and 224,908 long tons for the year. Corresponding figures are 14,742 long tons in November, 14,320 long tons in December, 1928, and 223,422 long tons for 1928.

Rubber Division A. C. S. Chicago Group Meeting

The meeting of the Chicago Group, Rubber Division, A. C. S., was held at Mailard's in Chicago, Ill., on the evening of January 17, 1930, with about one hundred members present. Dr. C. E. Frick, of Van Cleef Bros., presided and introduced the following speakers and the subjects of their papers: L. J. D. Healy, Fisk Rubber Co., Cudahy, Wis., "Modern Developments in Control Instruments for Rubber Factories"; R. E. Olson, Taylor Instrument Companies, Rochester, N. Y., "Recently Developed Instruments for Tire Vulcanizing Processes"; E. L. Stilson, Bristol Co., Akron, O., "Modern Developments in Instruments for the Rubber Industry".

This first 1930 meeting of the Chicago Group proved to be a most interesting event, and the papers were both practical and informative.

American Chemical Society Officers

William McPherson, dean of the Graduate School of Ohio State University, became president of the American Chemical Society on January 1 as a result of the society's annual election. Dean McPherson will serve during 1930, succeeding Dr. Irving Langmuir, associate director of research of the General Electric Co.

Moses Gomberg, professor of chemistry in the University of Michigan, was chosen president for 1931. In accordance with a recent change in its constitution, the society now elects each year a president and a president-elect, who serve in successive years.

Secretary Charles L. Parsons, of Washington, reports that the American Chemical Society now has 17,457 members, an increase of 1,200 during the year.

RUBBER SCRAP

RUBBER scrap demand in January was somewhat better than in December. On a few types the prices declined slightly, notably in inner tubes and airbrake hose. Export demand continued good and was confined mostly to inner tubes and solid tires. Both of these grades are utilized for remanufacture into new footwear products, particularly in Spain.

In general scrap dealers have little price incentive to go after scrap during the cold weather with general demand slack.

BOOTS AND SHOES. Stocks were quiet and in fair demand, the same as in December.

INNER TUBES. The prices are somewhat lower with demand fairly good at the reduced levels. No. 1 floating grade has declined ¼-cent a pound. No. 2 compounded remains unchanged. Red tubes are reduced ¼-cent a pound.

TIRES. All grades of pneumatic tire scrap are quoted unchanged from a month ago, and the demand is somewhat better.

SOLID TIRES. Solid tires have advanced \$2 per ton.

MECHANICALS. Mixed black scrap has moved up ¼-cent a pound. Air brake hose, however, dropped \$3 per ton, and the demand has fallen off slightly. Other grades remain unchanged.

HARD RUBBER. There is no change of prices in hard rubber scrap. Demand holds dull.

CONSUMERS' BUYING PRICES

Carload Lots

January 27, 1930

Boots and Shoes

	Prices
Boots and shoes, black.....lb.	\$1.20 @ \$1.35
Untrimmed arctics.....lb.	.003½ @ .01
Tennis shoes and soles.....lb.	.003½ @

Inner Tubes

No. 1, floating.....lb.	.07 @ .07½
No. 2, compound.....lb.	.035½ @ .03½
Red.....lb.	.03½ @ .04
Mixed tubes.....lb.	.03½ @ .03½

Tires

Pneumatic Standard—	
Mixed auto tires with beads.....ton	18.00 @ 18.50
Beadless.....ton	27.50 @ 28.00
White auto tires with beads.....ton	40.00 @ 42.00
Beadless.....ton	48.00 @ 49.00
Mixed auto peeling.....ton	30.00 @ 31.00
Solid—	
Mixed motor truck, clean.....ton	24.00 @ 26.00

Mechanicals

Mixed black scrap.....lb.	.00¾ @ .01
Hose, air brake.....ton	18.00 @ 18.50
regular soft.....lb.	.00¾ @
No. 1 red.....lb.	.02 @ .02½
No. 2 red.....lb.	.01 @ .01½
White druggists' sundries.....lb.	.02 @ .02½
Mechanical.....lb.	.01½ @ .01½

Hard Rubber

No. 1 hard rubber.....lb.	.08½ @ .09½
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English Rubber Scrap Market

(By Cable)

CONSUMERS' BUYING PRICES

London, January 24, 1930.

	£	Per Ton
Galoshes.....	£4 @	£5
Prime ebomite.....	25 @	30
Motor tires.....	2 @	1 1/2/3
Floating motor tubes.....	30 @	35
Red motor tubes.....	15 @	16

Market reported featureless.

Scrap Rubber Exports to Far East

Scrap rubber to the extent of at least 5,000,000 pounds was exported to the Far East (chiefly Japan) during 1929 according to estimates of chambers of commerce on the Coast. Points of shipment were given as Vancouver, B. C., Portland, Seattle, San Francisco, and Los Angeles; and demand is reported strong especially for tire, tube, and footwear sorts. Much mixed scrap is also being exported to Germany from coast points. Prices continue low on all grades; but dealers look for an early improvement as scrap collecting has been lagging on account of low prices, and many who have accumulated stocks are disposed to hold them for somewhat better figures. Reclaimers report fair stocks on hand, but some are quite concerned about the growing foreign demand and the possibly insufficient domestic collection.

A. S. T. M. ACTIVITIES¹

Committee D-13 on Textile Materials has been quite active during the past year. Tentative Specifications for Tire Chatter Fabrics and for Asbestos Tape for Electrical Purposes have been adopted. The committee now has fifteen standard and nine tentative specifications. Active work is in progress on specifications for belting duck, electrical tapes, enameling duck, and napped sheeting.

A large amount of investigative work is being carried on. Work of a fundamental nature is being carried on in experiment stations and the office of Cotton Marketing Investigation in the Department of Agriculture, which will have an important bearing on our specifications for raw cotton. The question of moisture regain is also being studied. Likewise a standard method of measuring is receiving consideration.

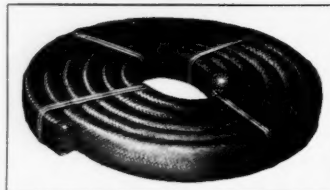
Certain revisions in test methods for tire cord have been recommended by a special committee. These are being studied with a view to incorporating them in our specifications.

Committee D-11 on Rubber Products has a number of projects before it including a program of investigation and standardization of test methods for steam hose in connection with which it is proposed to consider new tests which will provide better measures of service performances; the preparation of standard methods for testing power transmission belting and the

classification of various types of transmission belting; the development of performance specifications for rubber insulation; a study of life tests for rubber products and the development of abrasion tests for rubber products.

HIGH-PRESSURE STEAM PACKING

High-pressure steam packing of expansion wedge construction is especially adapted for general steam, air, hot and cold water conditions. A well-known brand of this type of piston rod packing



Linear High-Pressure Packing

is that pictured in the illustration. It comprises two duck and rubber wedges, with a high quality upper cushion, held together with a cotton braided cover. This is a very common construction and is especially adaptable for use where piston rods are scored or badly worn. The braided exterior of this packing is well impregnated with high grade oil and flake graphite.

Under compression in the stuffing box

The committee is especially interested in the development of rubber products for absorbing vibration, which products, of course, are of especial interest to the automotive industry. In this connection the committee submitted a new method of test for hardness of soft rubber (in slab form).

the diagonal wedges move upon each other to effect sufficient tightness of packing. Each layer of packing ring or spiral coil makes a steam-tight joint around the piston rod, alternating with a cushioning layer of yielding rubber as mentioned above.

There are many well-known forms of piston rod packings made up with and without rubber, and combined with jute, flax, asbestos, brass wire, etc., to meet the various conditions where joints must be packed tightly against low and high-pressure steam, ammonia, oils, etc. Linear Packing Mfg. Co., Inc., Philadelphia, Pa.

Vinylite

Union Carbide & Carbon Corp., New York, N. Y., has put on the market a new synthetic resin known as vinylite which has a number of special qualities that make it particularly well adapted for use in lacquer bases and in plastics for the manufacture of compounds similar to bakelite. It is believed this new product will have an important field and many varied uses.

¹A. S. T. M. Bulletin, Jan., 1930.

COMPOUNDING INGREDIENTS

THE production of tires and tubes has not yet reached the volume indicated before the turn of the year because automobile production has been delayed, especially in passenger cars. The automobile industry seems confident of a car and truck demand approximating that of 1929. Tire manufacturers have placed orders for compounding ingredient supplies, including reclaims, more or less on this basis for February delivery. Activity in the footwear division was stimulated by a sudden demand which in many instances depleted retailers' stocks. Mechanical rubber goods demand is seasonal and steady. Insulated wire production was slackened early in the winter by the decline in the building industry. It is due for a pronounced revival with the renewal of public and private construction so generally planned throughout the country.

ACCELERATORS. Manufacturers of accelerators report a good January demand running into heavy tonnage for the popular accelerators.

ANTIOXIDANTS. These materials are companion materials to accelerators as regards their technical value. They are be-

ing steadily improved, differentiated as to adaptation, and are gaining in favor. Ultimately their consumption should attain equal tonnage with accelerators.

Some antioxidants are applicable with distinctly beneficial effect for the preservation of stocks compounded heavily with reclaims. When this fact is fully appreciated, antioxidants will be utilized in the cheap competitive goods that without antioxidants lose their value too quickly.

BENZOL. In December production was greatly reduced seasonally. Output is now gaining in volume. Prices were reduced ½-cent a gallon about the middle of January and this was succeeded by improved demand.

CARBON BLACK. Consumers were more inclined to deal in the spot market than to place long term contracts. Competition became sufficiently keen to cause two reductions in price. The first reduction, on January 8, was ¼-cent, making the f. o. b. price in Texas 5.75 cents and in Louisiana 5.85 cents. The following week a second reduction was made of ¼-cent, bringing the f. o. b. price in Texas to 5.5 cents and in Louisiana to 5.6 cents. The demand

improved in response to these reductions.

CLAY. This material is in steady demand. In spite of the low price of clay it is feeling competition from low priced reclaims, which introduce mineral compounding ingredients as well as rubber.

LITHARGE. Rubber manufacturing demand for litharge is good. There is steady forward buying at firm prices.

LITHOPONE. There is good rubber demand for lithopone and steady forward buying. The market is firm.

MINERAL RUBBER. Domestic and export demand for this material is active. As in the case of clay and other low-priced inert ingredients, mineral rubber demand is more or less sensitive to the plasticity value of low priced reclaim.

V. M. P. NAPHTHA. Since the first of January prices have held firm with demand increasing in volume.

STEARIC ACID. Early in January there was some reduction in price. Buying has not totaled extraordinary volume but has imparted activity to the market.

ZINC OXIDE. The good demand in prospect before the opening of the year has begun since to be realized from the rubber industry. The falling price of slab zinc has not reduced the price of zinc oxide.

Accelerators, Inorganic

Lead, carbonate.....lb.	\$0.08¼ @	
Lead, red.....lb.	.09¼ @	
sublimed white.....lb.	.07¼ @	
sublimed blue.....lb.	.07¼ @	
super-sublimed white.....lb.	.08 @	
Lime, R. M. hydrated.....ton	20.00 @	
Litharge.....lb.	.08¼ @	
Magnesia, calcined heavy.....ton	90.00 @	
carbonate.....lb.	.08¼ @	.11
Orange mineral A.A.A.....lb.	.11¼ @	

Accelerators, Organic

A-7.....lb.	.55 @	.65
A-11.....lb.	.62 @	.75
A-16.....lb.	.57 @	.65
A-19.....lb.	.58 @	.75
A-20.....lb.	.64 @	.80
A-32.....lb.	.80 @	.95
Aldehyde ammonia.....lb.	.65 @	.70
Butene.....lb.	@	
Captax.....lb.	.60 @	.70
Crylene.....lb.	@	
paste.....lb.	@	
D. B. A.....lb.	@	
D. O. T. G.....lb.	.42 @	.47
D. P. G.....lb.	.30 @	.35
Ethylideneaniline.....lb.	.45 @	.47½
Formaldehydeaniline.....lb.	.37½ @	.42½
Grasselerager 102.....lb.	@	
552.....lb.	@	
808.....lb.	@	
833.....lb.	@	
Heptene.....lb.	@	
base.....lb.	@	
Hexamethylenetetramine.....lb.	.58½ @	.61
Lead oleate, No. 999.....lb.	.15½ @	
Witco.....lb.	.15 @	
Lithex.....lb.	@	
Methylenedianiline.....lb.	.37½ @	.40
Monex.....lb.	@	
Phenex.....lb.	.70 @	.75
Plastone.....lb.	@	
R-2.....lb.	2.00 @	2.50
R. & H. 40.....lb.	.40 @	.42½
50.....lb.	.40 @	.42½
Safex.....lb.	@	
S.P.D-X.....lb.	.70 @	.75
Super-sulphur No. 1.....lb.	.50 @	.52
No. 2.....lb.	.18 @	.25
Tensilac No. 39.....lb.	.40 @	.42½
No. 41.....lb.	@	
Thermlo F.....lb.	.50 @	.55
Thiocarbamil.....lb.	.25½ @	.28½
Trimene.....lb.	@	
base.....lb.	@	
Tuads.....lb.	3.25 @	3.50
V. G. B.....lb.	@	
Waxene.....lb.	.30 @	.40
Z. B. X.....lb.	@	
Z-88.....lb.	.50 @	.60
Zimate.....lb.	4.00 @	5.00

Acids

Acetic 28% (bbls.).....100 lbs.	3.88 @	4.13
glacial (carbonyl).....100 lbs.	14.18 @	14.43
Sulphuric, 66%.....ton	15.50 @	

New York Quotations

January 27, 1930

Alkalies

Caustic soda, solid.....100 lbs.	\$2.75 @	
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Antioxidants

Age-Rite, powdered.....lb.	.57 @	.62
resin.....lb.	.57 @	.62
white.....lb.	1.10 @	1.20
Alhasan.....lb.	@	
Antox.....lb.	@	
Grasselerager A.....lb.	@	
Resistox.....lb.	.54 @	.65
Stabilite.....lb.	.62 @	
Stabilite-Alba.....lb.	.75 @	
Sinproof.....lb.	@	

Colors

BLACK

Bone.....lb.	.09½ @	
Carbon (see compounding ingredients).....lb.	@	
Drop (bbls.).....lb.	.05½ @	.15
Lampblack (commercial).....lb.	.07 @	.08

BLUE

Akco blue.....lb.	@	
Huber, brilliant.....lb.	3.50 @	4.00
Prussian.....lb.	.35 @	.37
Ultramarine.....lb.	.06 @	.30

BROWN

Huber mocha.....lb.	1.60 @	2.10
Sienna, Italian, raw.....lb.	.05½ @	.12½

GREEN

Akco green.....lb.	@	
Chrome, light.....lb.	.27 @	.31
medium.....lb.	.28 @	.31
Chromium oxide.....lb.	.33 @	.38
Huber brilliant.....lb.	3.75 @	4.25

ORANGE

Huber Persian.....lb.	.50 @	1.00
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RED

Akco red.....lb.	@	
Antimony.....lb.	@	
Crimson, 15/17%.....lb.	@	
Sulphur free.....lb.	@	
Crimson, R. M. P. No. 3.....lb.	.48 @	
Sulphur, free.....lb.	.52 @	
Vermilion, No. 5.....lb.	@	
No. 15.....lb.	@	
Golden.....lb.	@	
No. 60.....lb.	@	
15/17%.....lb.	@	
7-A.....lb.	.35 @	
Z-2.....lb.	.22 @	

RED (Continued)

Aristi.....lb.	@	
Huber brilliant.....lb.	\$1.35 @	\$1.85
Iron Oxides.....lb.	@	
bright pure domestic.....lb.	.11 @	
bright pure English.....lb.	.14 @	
bright reduced English.....lb.	.10 @	
bright reduced domestic.....lb.	.10 @	
Indian (maroon), pure.....lb.	.11 @	
domestic.....lb.	.11 @	
Indian (maroon), pure.....lb.	.11 @	
English.....lb.	.09½ @	
Indian (maroon) reduced.....lb.	@	
English.....lb.	.08 @	
Oximony.....lb.	.13½ @	.04
Spanish red oxide.....lb.	.02½ @	
Sunburnt red.....lb.	.14 @	
Venetian red.....lb.	.02 @	.06

WHITE

Lithopone.....lb.	.05½ @	.05½
Albalith.....lb.	@	
Azolith.....lb.	.05½ @	.05½
Grasselli.....lb.	.05½ @	.05½
Sterling.....lb.	@	
Titanium oxide, pure.....lb.	.22 @	.23
Titanox "B".....lb.	.07½ @	.07½
Titanox "C".....lb.	.07½ @	.08½
Zinc Oxide.....lb.	@	
AAA (lead free) (bbls.).....lb.	.07 @	
Azo (factory).....lb.	@	
ZZZ (lead free).....lb.	.06½ @	.07
ZZ (lead).....lb.	.06½ @	.06½
Z (8% lead).....lb.	.06½ @	.06½
Green seal.....lb.	@	
Kadox.....lb.	@	
Red seal.....lb.	@	
Special.....lb.	@	
White seal.....lb.	@	
XX green label.....lb.	@	
XX red label.....lb.	@	

YELLOW

Akco yellow.....lb.	@	
Cadmium sulphide.....lb.	1.00 @	1.40
Chrome.....lb.	.17 @	.17½
Grasselli cadmium.....lb.	@	
Huber canary.....lb.	2.80 @	3.30
Ochre, domestic.....lb.	.01½ @	.02½
French.....lb.	.03 @	
Oxide, pure.....lb.	.09 @	
Zinc, C. F., imported.....lb.	.21 @	

Compounding Ingredients

Aluminum flake (sacks, c.l.).....ton	21.85 @	
(sacks l.c.l.).....ton	24.50 @	
Ammonium carb. pwd.....lb.	.11 @	
lump.....lb.	.10 @	
Asbestine.....ton	13.40 @	13.50
Barium carbonate.....ton	60.00 @	70.00
Baryta white (f.o.b. St. Louis, bbls.).....ton	23.00 @	

Compounding Ingredients (Continued)

Baryta white (f.o.b. St. Louis, paper bags).....	ton	\$22.20	@
Barytes, pure white.....	ton	35.00	@
off color.....	ton	25.00	@
medium.....	ton	32.50	@
Foam "A" (f.o.b. St. Louis, bbls.).....	ton	23.00	@
Foam "A" (f.o.b. St. Louis, bags).....	ton	23.00	@
Basofor.....	lb.	.04½	@
Blanc fixe, dry.....	lb.	.04½	@
pulp.....	ton	42.50	@45.00
Carbon Black			
Aeriflot arrow.....	lb.	.07	@ .11
Century (works, La., c. l.).....	lb.	5.60	@ .10
Compressed.....	lb.	.06	@ .10
Disperso (works, La., c. l.).....	lb.	5.60	@ .10
Flex.....	lb.	.05	@ .08
Fumonex.....	lb.	.04½	@ .08
Gastex (f.o.b. fact'y) contracts.....	lb.	.04½	@ .04½
carload.....	lb.	.05½	@ .12
less carload.....	lb.	.07½	@ .12
Micronex.....	lb.	.06	@ .09
P-33.....	lb.	.04	@ .07
Thermox.....	lb.	.05½	@ .09½
Uncompressed.....	lb.	.04	@ .06
Velvetex.....	lb.	.04	@ .06
Carrara filler.....	ton	12.00	@
Chalk.....	ton	9.00	@20.00
Clay, Blue Ridge, dark.....	ton	15.00	@29.00
Blue Ridge, light.....	ton	10.00	@
China.....	ton	15.00	@29.00
Dixie.....	ton	10.00	@
Langford.....	ton	7.00	@
Mineral flour (Florida).....	ton	25.00	@
Par.....	ton	8.00	@20.00
Perfection.....	ton	.13	@
Suprex.....	ton	.10	@ .12
Cotton flock, black.....	lb.	.12	@ .30
light-colored.....	lb.	.25	@ .35
white.....	lb.	.16	@ .23
Glue, high grade.....	lb.	.16	@ .23
low grade.....	lb.	.10	@
Infusorial earth.....	ton	45.00	@
Mica amber.....	lb.	.60	@
Neomerpin, S. A. conc.....	lb.	.02½	@ .04
Pumice stone, pwd.....	lb.	23.50	@28.00
Rottenstone, domestic.....	ton	.60	@
Shellac, fine orange.....	lb.	.11	@ .12
Soapbark (cut).....	ton	15.00	@22.00
Soapstone.....	ton	18.00	@22.00
Talc, domestic.....	ton	7.50	@
French.....	ton	7.50	@
Pyrex A.....	ton	7.50	@
B.....	ton	7.50	@
Whiting.....	ton	1.00	@
Domestic.....	100 lbs.	1.50	@
English, cliffstone.....	100 lbs.	.95	@ 1.25
Imported chalk.....	100 lbs.	1.50	@ 3.50
Paris White, English.....	100 lbs.	13.00	@22.00
cliffstone.....	100 lbs.	7.00	@
Quaker.....	ton	7.00	@
Slate flour, gray.....	ton	7.00	@
(fact'y).....	ton	7.00	@

New York Quotations

January 27, 1930

Compounding Ingredients—(Continued)

Snow white.....	ton	@
Sussex.....	ton	\$8.00 @ \$15.00
Vancollid.....	ton	@
Westminster Brand.....	100 lbs.	@
Witco (l. c. l.).....	ton	20.00 @
(f.o.b. New York).....	ton	20.00 @

Factice—See Rubber Substitutes

Mineral Rubber

Fluxrite (solid).....	lb.	@
Genasco (fact'y).....	ton	50.00 @ 52.00
Gilsonite (fact'y).....	ton	37.14 @ 39.65
Granulated M. R.....	ton	30.00 @ 45.00
Hydrocarbon, hard.....	ton	24.00 @ 40.00
Hydrocarbon, soft.....	ton	@
Ohmloc Kapak, M. R. (f.o.b. fact'y).....	ton	60.00 @
M. 4 (f.o.b. fact'y).....	ton	175.00 @
Paradura (fact'y).....	ton	62.50 @ 65.00
Pioneer, M. R., solid fact'y.....	ton	40.00 @ 42.00
M. R. granulated.....	ton	50.00 @ 52.00
Robertson, M. R., solid (fact'y).....	ton	34.00 @ 80.00
M. R. granulated.....	ton	38.00 @ 80.00

Oils

Kerosene.....	gal.	.15 @
Mineral.....	gal.	.20 @
Poppy seed oil.....	gal.	1.70 @
Rapeseed.....	gal.	.75 @
Red oil, distilled.....	lb.	.10½ @ .10½
Rubber process.....	gal.	.25 @
Spindle.....	gal.	.30 @

Rubber Substitutes or Factice

Black.....	lb.	.08 @ .14
Brown.....	lb.	.07½ @ .15
White.....	lb.	.09 @ .16

Softeners

Burgundy pitch.....	100 lbs.	6.00 @
Atlas.....	100 lbs.	6.50 @
Corn oil, crude.....	lb.	.10 @
Cottonseed oil.....	lb.	.11½ @
Cyclone oil.....	gal.	.26 @ .34
Degras.....	lb.	.03½ @ .04½
Fluxrite (fluid).....	lb.	@
Moldrite.....	lb.	@
Palm oil (Lagos).....	lb.	.09½ @
Palm oil (Niger).....	lb.	.08½ @
Palm oil (Witco).....	lb.	.17 @
Para-flux.....	gal.	.08½ @ .08½
Petrolatum, snow white.....	lb.	.02½ @ .03
Pigmentar oil (tank cars, factory).....	gal.	.18 @
(bbls., drums).....	gal.	.24 @
Pine oil, dest distilled.....	gal.	.55 @ .56

Softeners (Continued)

Pine tar (retort).....	bbl.	\$11.50 @ \$12.00
Rosin K (bbls.).....	280 lbs.	8.60 @
Rosin oil compounded.....	gal.	0.30 @
No. 3, deodorized.....	gal.	.58 @
No. 556, deodorized.....	gal.	.49 @
Rubber seed, drums.....	lb.	.09½ @
Rubtack.....	lb.	.10 @
Stearic acid, double pressed.....	lb.	.14 @ .15
Tackol.....	lb.	.17 @
Witco No. 20.....	gal.	.17 @
Woburn oil.....	lb.	.05½ @ .06

Solvents

Benzol (90% drums).....	gal.	.27 @
Carbon bisulphide (drums) lb. tetrachloride (drums).....	lb.	.05½ @ .11
Cyclohexanocemethyl.....	lb.	.06½ @ .07
Dip-Sol.....	gal.	.50 @
Dryolene, No. 9.....	gal.	.35 @
Gasoline.....	gal.	.10½ @
No. 303.....	gal.	.20 @
Drums, c. l. Tankcars.....	gal.	.16 @
Hexalin.....	lb.	.60 @
Rub-Sol.....	gal.	.09 @
Solvent naphtha.....	gal.	.35 @
Stod-Sol.....	gal.	.10 @
Turpentine, Venice.....	gal.	.20 @
dest distilled.....	gal.	.40 @ .43

Vulcanizing Ingredients

Sulphur			
Velvet flour (240 lb. bbls.).....	100 lbs.	2.95	@ 3.50
(150 lb. bags).....	100 lbs.	2.60	@ 3.15
Soft rubber (c.l.).....	100 lbs.		@
(l.c.l.).....	100 lbs.		@
Superfine commercial flour (bbls.).....	100 lbs.	2.55	@ 3.10
(bags).....	100 lbs.	2.20	@ 2.80
Tire brand, superfine.....	100 lbs.	1.90	@ 2.25
Tube brand, velvet.....	100 lbs.	2.40	@ 2.75
Sulphur chloride.....	lb.	.03½	@ .04
Vandex.....	lb.	1.80	@ 2.10
(See also Colors—Antimony)			

Waxes

Beeswax, white, com.....	lb.	.55 @
carnauba.....	lb.	.33 @
ceresine, white.....	lb.	.12½ @
montan.....	lb.	.07½ @
ozokerite, black.....	lb.	.28 @
green.....	lb.	.28 @

Paraffin

122/124 crude, white scale.....	lb.	.03½ @
124/126 crude, white scale.....	lb.	.03½ @
123/125 full refined.....	lb.	.04 @
125/127 fully refined.....	lb.	.04½ @

Tire Production Statistics

High Pressure Pneumatic Casings				High Pressure Inner Tubes				Balloon Inner Tubes			
All Types			Cord			In-vent			In-vent		
In-vent	Pro-duction	Total Shipments	In-vent	Pro-duction	Total Shipments	In-vent	Pro-duction	Total Shipments	In-vent	Pro-duction	Total Shipments
1928	58,457,873	55,721,937	19,402,218	19,351,380	19,351,380	23,255,891	23,749,966	23,749,966	36,878,990	34,093,223	34,093,223
1929											
January ..	10,284,158	5,041,530	4,969,647	3,651,041	1,563,554	4,734,477	1,540,272	1,800,676	6,805,018	3,347,660	3,630,579
February ..	11,620,960	5,183,693	3,961,731	4,073,644	1,373,691	5,159,171	1,398,156	1,046,042	7,572,752	3,675,116	2,908,406
March	12,263,816	5,639,426	5,031,101	4,330,747	1,397,657	5,356,289	1,475,822	1,276,490	7,938,587	4,120,493	3,773,585
April	12,696,808	5,912,854	5,470,779	4,292,167	1,305,224	5,220,167	1,347,128	1,447,504	8,369,244	4,375,920	3,921,768
May	13,386,440	6,109,026	5,388,291	4,285,674	1,371,987	5,017,011	1,155,013	1,480,293	9,167,038	4,586,606	3,795,350
June	13,197,709	5,477,771	5,440,693	3,883,587	1,249,956	4,314,644	1,177,147	1,698,896	9,504,071	4,049,173	3,510,947
July	12,027,230	4,856,241	5,891,020	3,325,494	1,162,182	3,540,819	1,382,118	2,135,297	8,692,058	3,249,014	3,945,727
August	10,669,370	4,354,353	5,883,561	2,773,039	1,055,483	2,927,371	1,534,547	2,207,751	7,673,503	2,846,491	3,926,368
September ..	9,656,392	3,568,200	4,498,772	2,351,815	905,555	2,785,533	1,549,926	1,675,954	7,258,870	2,598,062	3,008,065
October	9,633,404	3,689,184	3,719,757	2,275,990	952,347	3,103,336	1,610,942	1,274,129	7,121,095	2,386,892	2,475,005
November ..	9,791,415	2,702,577	2,668,319	2,313,743	774,620	3,264,933	1,088,037	910,444	6,990,953	1,745,533	1,870,927
Balloon Casings				Solid and Cushion Tires				Cotton and Rubber Consumption			
In-vent			In-vent			Cotton Fabric			Crude Rubber		
In-vent	Pro-duction	Total Shipments	In-vent	Pro-duction	Total Shipments	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
1928	38,878,218	35,931,982	508,223	512,602	512,602	222,243,398	600,423,401	600,423,401			
1929											
January ..	6,583,958	3,470,596	3,499,121	149,240	31,583	19,779,481	54,160,529	54,160,529			
February ..	7,472,592	3,796,660	2,976,698	145,811	29,747	20,326,530	57,558,636	57,558,636			
March	7,858,642	4,229,586	3,863,650	141,902	35,441	21,238,410	61,335,423	61,335,423			
April	8,346,727	4,601,986	4,123,769	137,613	38,419	23,619,687	65,673,453	65,673,453			
May	9,047,376	4,732,416	4,022,910	133,654	39,611	23,302,120	56,861,320	56,861,320			
June	9,274,926	4,223,336	3,829,506	131,633	39,741	20,358,937	52,249,004	52,249,004			
July	8,670,533	3,689,616	4,192,894	127,653	38,470	18,125,761	45,458,603	45,458,603			
August	7,869,710	3,293,595	4,192,894	110,596	27,702	15,802,783	39,981,294	39,981,294			
September ..	7,266,230	2,655,594	3,173,529	110,574	34,576	13,469,050	41,774,943	41,774,943			
October	7,332,047	2,728,113	2,658,907	110,574	34,576	13,706,668	31,185,828	31,185,828			
November ..	7,364,873	1,923,296	1,924,073	117,327	30,500	10,268,770					

Rubber Manufacturers Association figures representing 75 per cent of the industry.

COTTON AND FABRICS

American Cotton

THE spot price of middling American cotton on January 2 was 17.45 cents compared with 17.30 cents on the first day of the preceding month, and 18.10 cents on November 1. The January quotations have been confined to the same narrow range of approximately half a cent upward from the 17-cent level, as were those for December.

On the face of the figures it would seem that the supply and demand situations were pretty well balanced.

The *Textile World* reads, "It is considered possible that the unfavorable late picking season has reduced the yield to some extent, but the recession in business is shown both in figures in domestic consumption and exports, and the opinion prevails that there is plenty of cotton to go around. The price of it appears to have been pegged by the loan policies of the Federal Farm Board, but with an adequate supply available the establishment of a minimum price is merely an invitation to buyers to resist advances rather than a stimulant of speculation for higher levels."

Dr. Lewis H. Haney, *Textile World* analyst, says, "Raw cotton, though not likely to make any sustained advance, shows signs of stabilization. It does not

WEEKLY AVERAGE PRICES OF MIDDLING COTTON

Week Ended	Cents per Pound
Jan. 4	17.27
Jan. 11	17.44
Jan. 18	17.36
Jan. 25	17.36

seem probable that cotton prices will fall much lower, and there seems no likelihood at all that the price will go as low as it did toward the end of 1926. After all, the supply is much smaller than then, and while consumption is reduced, it is still in a fair balance with the quantity available.

"Some of the factors favoring strength in the market are: (1) Reduction in the estimate of the world cotton crop, on account of the lower prospective outturn in India. (2) The relative low percentage of high grade cotton, and the large percentage that is not tenderable. (3) Mill stocks decreased somewhat more than usual in November, and some mills are reported as not being well supplied. (4) The world's visible supply has increased less rapidly, and the increase a week ago was less than last year. (5) The activity of the Federal Farm Board in extending credit to cotton cooperatives, and the larger percentage of the crop handled by them.

"Factors contributing to the market's weakness: (1) India cotton continues below parity to American. (2) Exports continue small with the total for the season 564,000 bales below last year. (3) The rather large holdings of the cooperatives, much of which is probably low grade cotton, may be a disturbing factor later on. (4) The first small indications as to the 1930 crop do not suggest a reduction in acreage; fertilizers are cheap with large advance purchases reported. (5) Distant futures are relatively low. (6) Stocks of finished goods show a rising trend, and spinners have apparently bought heavily in the futures market on declines, and this 'trade buying' will later on offset hedge buying on the part of spot interests. (7) The general trend of business is down.

"On the whole were it not for the stabilizing influences referred to, we might conclude that somewhat lower prices would result.

"The following comparative statistics are of interest:

Year	Crop (000-500 lb. bales)	Ginning to December 13 (000- running bales)	December average price	Average price for season
1929-30	14,919	13,462	17.30	19.65
1928-29	14,478	13,144	20.46	20.33
1927-28	12,936	12,072	19.56	20.33
1926-27	17,977	15,541	12.68	15.07
1925-26	16,104	14,832	20.06	20.52
1924-25	13,153	12,792	23.85	24.74

Drills

38-inch 2.09-yard	.....yard	\$0.16 @
40-inch 3.47-yard	.....	.09½ @
50-inch 1.52-yard	.....	.21¾ @
52-inch 1.90-yard	.....	.17½ @
52-inch 2.20-yard	.....	.15¾ @
59-inch 1.85-yard	.....	.18¾ @

Ducks

38-inch 2.00-yard D. F.	.....yard	.16¾ @
40-inch 1.45-yard S. F.	.....	.22 @
72-inch 1.05-yard D. F.	.....	.33¾ @
72-inch 16.66-ounce35¾ @
72-inch 17.21-ounce37¾ @

MECHANICAL

Hose and beltingpound	.34½ @
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TENNIS

52-inch 1.35 yardyard	.24¾ @
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Hollands

R.T.5-30-inchyard	.16 @
R.T.7-36-inch18 @
R.T.8-40-inch20 @

RED SEAL

36-inchyard	.14½ @
40-inch	.....	.15½ @
50-inch	.....	.22½ @

GOLD SEAL

40-inch, No. 72	.....yard	.19¾ @
40-inch, No. 80	.....	.20¾ @

New York Quotations

January 27, 1930

Osnaburges

40-inch 2.35-yard	.....yard	\$0.13¾ @
40-inch 2.48-yard	.....	.13½ @
40-inch 3.00-yard	.....	.10¾ @
40-inch 10-oz. part waste	.....lb.	.17½ @
40-inch 7-oz.	.....lb.	.12 @
37-inch 2.42-yard	.....yard	.13¾ @

Raincoat Fabrics

COTTON

Bombazine 64 x 60	.....yard	.11 @
Bombazine 60 x 48	.....	.10 @
Plaids 60 x 48	.....	.12¾ @
Plaids 48 x 48	.....	.11¾ @
Surface prints 64 x 60	.....	.13 @
Surface prints 60 x 48	.....	.12¾ @
Print cloth, 38½-in., 60 x 48	.....	.06 @
Print cloth, 38½-in., 64 x 60	.....	.07 @

Sheetings, 40-inch

48 x 48, 2.50-yard	.....yard	.11½ @
48 x 48, 2.85-yard	.....	.09¾ @
64 x 68, 3.15-yard	.....	.10½ @
56 x 60, 3.60-yard	.....	.08¾ @
44 x 48, 3.75-yard	.....	.08 @ .08¾
44 x 40, 4.25-yard	.....	.07 @ .07¾

Sheetings, 36-inch

48 x 48, 5.00-yard	.....yard	.06¾ @ .06¾
44 x 40, 6.15-yard05¾ @

Tire Fabrics

SQUARE WOVEN 17½-ounce

Peeler, kardedpound	\$0.45 @
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BUILDER 23/11

Peeler, kardedpound	.45 @
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BUILDER 10/5

Peeler, kardedpound	.42 @
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CORD 23/5/3

Peeler, karded, 1½-in.pound	.45 @
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CORD 23/4/3

Peeler, kardedpound	.47 @
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CORD 23/3/5

Peeler, kardedpound	.50 @
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CORD 15/3/5

Peeler, kardedpound	.43 @
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CORD 13/3/3

Peeler, kardedpound	.42 @
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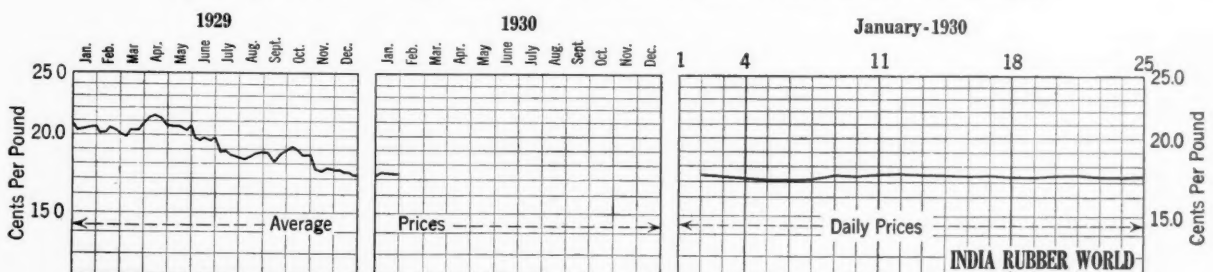
LENO BREAKER

8-oz. Peeler, kardedpound	.45 @
10-oz. Peeler, karded45 @

CHAFER

9.5-oz. Peeler, kardedpound	.48 @
12-oz. Peeler, karded	.....	.47 @
14-oz. Peeler, karded	.....	.45 @

New York Cotton Exchange Daily Prices of Spot Middling Upland Cotton



"Our study of the foregoing suggests 18½ cents as the maximum, or about one cent below the average of the preceding season."

On January 6 the Federal Farm Board called upon planters to reduce their production of cotton for the coming year, and added the warning that it does not propose to protect the growers by maintaining the price if overplanting develops next spring.

"Last year's acreage was too large," the Board said. "It was the largest planted acreage of any year in history, except 1925 and 1926. Nothing but crop failure in Texas in 1929 prevented a total yield of 16,000,000 bales in the belt. That is more American cotton than the world will take at a fair price. Large cotton crops sell for less than small ones. Ten million bales in 1923 sold for \$1,600,000,000; eighteen million bales in 1926 sold for less than \$1,000,000,000. That is, farmers picked and ginned 8,000,000 bales of cotton in 1926, gave them to the world free of charge, and, in effect, paid \$600,000,000 for the privilege."

The most important cotton news item of the month was the formation of the \$30,000,000 National Cotton Cooperative Corporation, certificate of incorporation for which was filed in Dover on January 13. It is understood that the corporation is to be controlled and managed by the various state cooperative associations, their voting power being in proportion to the number of bales of cotton each one handles, and furthermore that the corporation will have the authority to buy a

bale of cotton for every bale that the various cooperatives have handled. That is, if the cooperative associations have handled 2,000,000 bales of cotton this season, the new corporation will be privileged to handle 2,000,000 bales additional.

Harriss & Vose says, "It seems to us that the building up and centralizing of the power of the existing cooperative marketing associations may provide just the agency that is now lacking to keep spots and futures, months and markets, in line. It would give balance where balance has been destroyed. It would provide a concentrated interest and a single leadership where there is now only diffusion and contradiction. It would make tens or hundreds of thousands of bales available against distortions of value where there are now only unmobilized and uncoordinated thousands."

All staple cotton markets have been featureless and uninteresting during the past thirty days. There has been some demand for the shorter American staples, and some slight price concessions have been made; but holders are not yet anxious to sell, and spinners are content to allow merchants to do the carrying, feeling that the basis cannot advance much from present levels until there is some indication of a considerable expansion in consumption.

In Arizona the Pima crop is about over, and very little desirable cotton is left outside of merchants' hands.

On January 25 spot middling cotton was 17.35 cents up .05 from the day previous.

Cotton Fabrics

DUCKS, DRILLS AND OSNABURGS. The tone of the market for these goods is improving slowly. Fabric prices are distinctly low. The inventories do not bulk so unwieldy. Strictly white grade cotton is scarce and brings substantial price premiums. It is believed in the trade that fabrics will go higher in sympathy.

SHEETINGS. Conditions during January have not changed materially from the month previous. In the current market inquiry in the past 10 days or 2 weeks was not active. Although prices have shown no further decline, the market will have to exhibit more activity before an advance can be expected.

RAINCOAT FABRICS. The raincoat trade is improving and the present outlook is that very shortly buying will be in fair volume. A new imitation jersey print has appeared and is selling quite freely. The trade interest aroused by it indicates that it will be one of the outstanding numbers of the coming season.

TIRE FABRICS. The outstanding feature of the tire fabric trade is that business at present is very quiet. The heavy consumers are placing very little business outside of their own mills. Many tire men are delaying entrance into the market until their fabric requirements for the spring season are better defined. Filling-in lots have comprised a large percentage of the business of recent weeks in the tire fabric field.

Rims Approved by The Tire & Rim Association, Inc.

Rim Size	November, 1929		December, 1929		12 Months, 1929		Rim Size	November, 1929		December, 1929		12 Months, 1929	
	Number	%	Number	%	Number	%		Number	%	Number	%	Number	%
Motorcycle							22" Balloon						
24 x 3 CC	.....	...	.....	...	10,464	0.0	22 x 3½	.....	...	.....	...	170	0.0
24 x 3 Std.	.....	...	.....	...	4,668	0.0	22 x 4	.....	...	.....	...	1,469	0.0
26 x 3 CC	.....	...	.....	...	1,971	0.0	22 x 4½	106	0.0	.....	...	2,251	0.0
26 x 3 Std.	635	0.1	.....	...	4,186	0.0	High Pressure						
28 x 3 CC	.....	...	.....	...	2,194	0.0	30 x 3½-23	3,530	0.6	412	0.0	36,204	0.1
18 x 3 SS	2,602	0.4	2,149	0.2	28,947	0.1	31 x 4-23	.....	...	.....	...	1,086	0.0
19 x 3 SS	3,273	0.6	3,518	0.4	23,322	0.1	32 x 4½-23	2,677	0.4	3,697	0.4	55,420	0.2
20 x 3 SS	.....	...	1,712	0.2	1,712	0.0	32 x 4-24	.....	...	2,607	0.3	31,131	0.1
Clincher							33 x 4½-24	.....	...	.....	...	98	0.0
30 x 3½	13,401	2.3	5,316	0.6	318,787	1.3	32 x 3½-25	.....	...	.....	...	1,056	0.0
31 x 4	.....	...	.....	...	765	0.0	34 x 4½-25	102	0.0	650	0.1	4,224	0.0
18" Balloon							20" Truck						
18 x 4	27,103	4.5	66,589	7.6	1,343,576	5.6	30 x 5	136,311	22.9	121,455	13.8	3,436,496	14.2
18 x 3.25	.....	...	.....	...	117,424	0.5	32 x 6	24,727	4.1	22,168	2.5	443,577	1.9
18 x 4½	5,161	0.9	11,580	1.3	304,324	1.2	34 x 7	6,965	1.2	9,019	1.0	173,043	0.7
18 x 5	16,071	2.7	5,763	0.7	112,545	0.4	36 x 8	8,642	1.4	4,742	0.5	130,699	0.5
19" Balloon							40 x 10	.....	...	355	0.0	1,323	0.0
19 x 2.75	77,839	13.1	230,519	26.2	782,616	3.3	9-10/20	178	0.0	173	0.0	493	0.0
19 x 3½	115	0.0	21,623	2.5	586,287	2.4	22" Truck						
19 x 4	86,108	14.4	94,415	10.7	4,181,327	17.3	36 x 7	107	0.0	918	0.1	4,454	0.0
19 x 3.25	1,998	0.3	.....	...	330,558	1.4	38 x 8	650	0.1	720	0.1	13,809	0.1
19 x 4½	43,308	7.3	23,054	2.6	966,487	4.0	24" Truck						
19 x 5	20,646	3.5	20,580	2.3	220,666	0.9	34 x 5	825	0.1	.....	...	7,062	0.0
19 x 3.00 DC	12,564	2.1	183,129	20.8	195,693	0.8	36 x 6	59	0.0	6	0.0	31,467	0.1
20" Balloon							38 x 7	2,184	0.4	137	0.0	46,415	0.2
20 x 2.75	10,560	1.8	.....	...	5,263,579	21.8	40 x 8	2,249	0.4	4,999	0.6	75,487	0.3
20 x 3½	.....	...	.....	...	73,341	0.3	44 x 10	.....	...	.....	...	298	0.0
20 x 4	7,998	1.3	6,728	0.8	1,592,295	6.6	9-10/24	59	0.0	297	0.0	432	0.0
20 x 4½	16,412	2.7	6,595	0.7	359,804	1.5	Airplane						
20 x 5	2,847	0.5	.....	...	234,176	1.0	8 x 3	1,172	0.2	.....	...	2,226	0.0
20 x 6	.....	...	.....	...	37,625	0.1	12 x 3	.....	...	.....	...	1,669	0.0
20 x 4.00 DC	4,791	0.8	.....	...	20,846	0.1	14 x 3	.....	...	.....	...	101	0.0
21" Balloon							16 x 3	.....	...	.....	...	43	0.0
21 x 2.75	13,327	2.2	8,025	0.9	164,855	0.7	18 x 3	.....	...	.....	...	581	0.0
21 x 2.75 DC	228	0.0	.....	...	1,785,100	7.4	16 x 3½	.....	...	.....	...	3,007	0.0
21 x 3½	35,452	6.0	15,410	1.8	405,607	1.7	20 x 3½	.....	...	.....	...	4,095	0.0
21 x 4	510	0.1	199	0.0	67,689	0.3	20 x 4	.....	...	.....	...	1,546	0.0
21 x 4½	2,349	0.4	.....	...	65,594	0.3	20 x 5	.....	...	.....	...	221	0.0
21 x 5	418	0.1	.....	...	6,527	0.0	20 x 6	.....	...	.....	...	904	0.0
21 x 6	.....	...	.....	...	3,658	0.0	24 x 10	143	0.0	.....	...	756	0.0
							18 x 4 Clincher	587	0.1	.....	...	347	0.0
							Totals	596,989	...	879,259	...	24,141,502	...

United States Statistics

IMPORTS OF CRUDE AND MANUFACTURED RUBBER

	October, 1929		Ten Months Ended October, 1929	
	Pounds	Value	Pounds	Value
UNMANUFACTURED—Free				
Crude rubber.....	85,485,630	\$16,192,261	*1,067,760,131	*\$204,886,209
Liquid latex.....	651,788	146,937		
Jeintong or Pontianak...	1,424,269	181,421	15,838,639	2,118,490
Balata.....	130,761	43,756	1,545,493	535,409
Gutta percha.....	448,000	79,968	2,353,000	456,051
Guayule.....	1,838,837	35,534	18,417,347	359,002
Siak, scrap and reclaimed				
Totals.....	89,979,285	\$16,679,877	1,106,692,114	\$208,495,700
Chicle.....	1,115,232	\$599,458	10,023,984	\$5,019,308
MANUFACTURED—Dutiable				
Belting.....	14,965	\$5,554	58,669	\$31,444
Tires.....	299	2,708	3,586	48,830
Other rubber manufactures.....		169,210		1,895,795
Totals.....	15,264	\$177,472	62,255	\$1,976,069

EXPORTS OF FOREIGN MERCHANDISE

RUBBER AND MANUFACTURES				
Crude rubber.....	5,855,475	\$1,190,510	69,017,855	\$14,561,100
Balata.....	7,834	2,582	231,698	104,713
Gutta percha, rubber substitutes, and scrap.....	15,195	2,286	90,808	8,884
Rubber manufactures.....		88,218		606,431
Totals.....	5,878,504	\$1,283,596	69,340,361	\$15,281,128

EXPORTS OF DOMESTIC MERCHANDISE

MANUFACTURED				
Reclaimed.....	1,859,869	\$130,787	23,790,254	\$1,666,706
Scrap and old.....	5,560,876	220,024	45,824,505	2,111,545
Rubberized automobile cloth.....	89,057	46,487	1,738,404	894,030
Other rubberized piece goods and hospital sheeting.....				
Footwear.....				
Boots.....	184,587	359,203	1,176,537	2,514,094
Shoes.....	428,137	474,554	2,735,276	2,806,494
Canvas shoes with rubber soles.....	490,801	359,077	6,582,627	4,405,513
Heels.....	123,648	84,224	1,268,191	905,166
Water bottles and fountain syringes.....	64,466	44,263	374,683	253,688
Gloves.....	10,495	29,119	102,827	267,396
Other druggists' sundries.....		43,212		350,266
Balloons.....	75,455	89,998	659,553	705,023
Toys and balls.....		14,679		167,742
Bathing caps.....	6,604	10,653	173,511	371,450
Bands.....	40,407	20,577	403,118	214,995
Erasers.....	42,730	26,637	483,499	309,835
Hard rubber goods.....	141,470	18,565	1,802,997	234,118
Other goods.....		32,230		377,170
Tires.....				
Truck and bus casings, 6 inches and over.....	26,676	545,325	236,132	6,351,059
Other automobile casings.....	196,368	1,990,945	2,155,505	22,398,082
Tubes, auto.....	151,772	254,422	1,625,020	2,917,866
Other casings and tubes.....	30,534	140,210	177,314	527,363
Solid tires for automobiles and motor trucks.....				
Other solid tires.....	124,501	24,011	1,419,287	260,280
Tire accessories.....		112,476		1,448,456
Rubber and friction tape.....	99,650	32,086	1,405,344	412,659
Belting.....	815,625	251,949	4,786,363	2,572,752
Hose.....	216,499	264,942	7,804,943	2,599,179
Packing.....	153,223	105,317	2,210,583	1,012,085
Thread.....		148,878	1,425,874	1,444,645
Other rubber manufactures.....		226,057		2,758,872
Totals.....		\$6,248,564		\$65,372,044

*Liquid latex included.

Crude Rubber Imports by Customs Districts

	*November, 1929		Eleven Months Ended *November, 1929	
	Pounds	Value	Pounds	Value
Vermont.....			2,000	\$400
Massachusetts.....	2,634,088	\$465,469	36,703,482	6,887,345
New York.....	87,043,440	16,292,882	988,962,854	189,842,650
Philadelphia.....	1,111,620	205,636	8,295,723	1,573,143
Pittsburgh.....			2,240	583
Maryland.....	2,981,885	541,736	20,644,544	3,793,767
Los Angeles.....	3,104,871	576,210	63,311,224	12,245,846
San Francisco.....	153,180	27,286	1,540,118	314,679
Oregon.....	22,496	4,524	179,264	33,738
Washington.....			33,415	6,825
Michigan.....			144,164	29,914
Ohio.....	1,287,257	261,233	42,684,742	7,796,741
Colorado.....			3,577,960	751,860
Chicago.....			17,148	3,430
Totals.....	98,338,747	\$18,374,976	1,166,098,878	\$223,260,921

*Including latex, dry rubber content.

United Kingdom Statistics

IMPORTS

	November, 1929		Eleven Months Ended November, 1929	
	Pounds	Value	Pounds	Value
UNMANUFACTURED				
Crude Rubber				
From—				
Straits Settlements.....	19,403,200	£732,335	174,404,100	£7,513,431
Federated Malay States...	6,807,700	251,982	68,468,100	2,986,657
British India.....	974,200	35,835	10,537,600	463,796
Ceylon and Dependencies...	3,760,200	136,051	37,408,900	1,643,771
Other Dutch possessions in Indian Seas.....	2,520,800	94,695	23,983,400	1,066,381
Dutch East Indies (except other Dutch possessions in Indian Seas).....	2,800,500	102,361	30,312,100	1,331,147
Other countries in East Indies and Pacific not elsewhere specified.....	541,200	19,363	2,704,400	115,818
Brazil.....	870,400	34,404	7,235,600	318,404
South and Central America (except Brazil).....			123,400	5,426
West Africa.....				
French West Africa....	45,500	1,512	176,200	5,788
Gold Coast.....	47,500	1,648	367,200	16,173
Other parts of West Africa.....	222,500	8,572	1,917,400	79,545
East Africa, including Madagascar.....	72,400	2,620	841,000	36,157
Other countries.....	514,100	21,384	2,167,700	94,797
Totals.....	38,580,200	£1,442,762	360,647,100	£15,677,291
Gutta percha and balata....	449,600	36,709	3,709,800	297,355
Waste and reclaimed rubber.	853,900	8,880	10,226,300	122,674
Rubber substitutes.....	1,200	34	83,100	2,100
Totals.....	39,884,900	£1,488,385	374,666,300	£16,099,420

MANUFACTURED				
*†Tires and tubes				
Pneumatic				
Outer covers.....		£22,527		£417,365
Inner tubes.....		5,189		77,810
Solid tires.....		9,463		86,746
Boots and shoes.....	56,632	144,363	991,450	1,556,501
Other rubber manufactures..		191,864		1,904,513
Totals.....		£373,406		£4,042,935

EXPORTS

UNMANUFACTURED				
Waste and reclaimed rubber.	2,396,100	£19,209	31,533,800	£239,614
Rubber substitutes.....	37,000	959	801,600	16,824
Totals.....	2,433,100	£20,168	32,335,400	£256,438
MANUFACTURED				
*†Tires and tubes				
Pneumatic				
Outer covers.....		£327,983		£3,230,832
Inner tubes.....		48,955		501,799
Solid tires.....		16,938		148,694
Boots and shoes.....	26,126	46,833	315,677	508,335
Other rubber manufactures..		235,119		2,646,221
Totals.....		£675,828		£7,035,881

EXPORTS—COLONIAL AND FOREIGN

UNMANUFACTURED				
Crude Rubber				
To—				
Russia.....	602,600	£23,011	7,844,200	£341,933
Sweden, Norway, and Denmark.....	313,400	16,791	2,113,100	107,699
Germany.....	1,981,000	78,877	30,083,500	1,294,713
Belgium.....	826,700	40,012	9,995,800	415,673
France.....	2,514,900	113,210	36,502,800	1,661,892
Spain.....	65,300	3,172	912,400	43,043
Italy.....	495,900	21,394	7,927,500	370,438
Other European countries.	567,500	27,936	6,011,300	291,968
United States.....	1,501,300	60,188	10,824,200	445,352
Canada.....	76,800	3,100	80,900	3,295
Other countries.....	199,700	12,250	2,313,300	120,694
Totals.....	9,145,100	£399,941	113,709,000	£5,096,700
Gutta percha and balata....	17,200	1,752	734,800	56,831
Waste and reclaimed rubber.	52,100	1,008	209,700	3,642
Rubber substitutes.....		1	4,500	105
Totals.....	9,214,400	£402,702	114,658,000	£5,157,278

MANUFACTURED				
*†Tires and tubes				
Outer covers.....		£4,106		£58,391
Inner tubes.....		953		12,750
Solid tires.....		9		1,068
Boots and shoes.....	944	3,103	14,492	32,369
Other rubber manufactures..		8,320		89,109
Totals.....		£16,491		£193,687

*After April 12, 1927, tires and tubes imported with complete vehicles or chassis, or fitted to wheels imported separately, are included under complete vehicles or parts.

†Motor cars, motorcycles, parts, and accessories, liable to duty from Sept. 29, 1915, until Aug. 1, 1924, inclusive, and after July 1, 1925. Commercial vehicles, parts, and accessories were exempt from duty until April 30, 1926, inclusive, and rubber tires and tubes until April 11, 1927, inclusive.

‡Tires and tubes included prior to April 12, 1927.

Crude Rubber Arrivals at New York as Reported by Importers

Plantations		CASES
Dec. 14. By "Dardanus," Far East.		
General Rubber Co.	1,140	
Chas. T. Wilson Co., Inc.	1,069	
Dec. 16. By "Imperial Prince," Far East.		
General Rubber Co.	5,057	
Chas. T. Wilson Co., Inc.	780	
Dec. 16. By "Madoera," Far East.		
General Rubber Co.	3,577	
Chas. T. Wilson Co., Inc.	528	
Dec. 17. By "Silverhazel," Far East.		
General Rubber Co.	2,879	
Chas. T. Wilson Co., Inc.	950	
Dec. 18. By "Greystoke Castle," Far East.		
General Rubber Co.	2,150	
H. Muehlstein & Co., Inc.	809	
Chas. T. Wilson Co., Inc.	978	
Dec. 20. By "Mahseer," Far East.		
General Rubber Co.	74	
H. Muehlstein & Co., Inc.	616	
Chas. T. Wilson Co., Inc.	241	
Dec. 20. By "Wray Castle," Far East.		
General Rubber Co.	3,383	
H. Muehlstein & Co., Inc.	1,583	
Chas. T. Wilson Co., Inc.	924	
Dec. 21. By "Breedyk," Far East.		
General Rubber Co.	3,256	
H. Muehlstein & Co., Inc.	50	
Chas. T. Wilson Co., Inc.	371	
Dec. 24. By "Pres. Johnson," Far East.		
General Rubber Co.	220	
H. Muehlstein & Co., Inc.	430	
Chas. T. Wilson Co., Inc.	3,544	
Dec. 26. By "Javanese Prince," Far East.		
General Rubber Co.	1,446	
H. Muehlstein & Co., Inc.	920	
Chas. T. Wilson Co., Inc.	1,172	

* Estimated.

† Arrived at Los Angeles.

		CASES
Dec. 30. By "Forresbank," Far East.		
General Rubber Co.	350	
Chas. T. Wilson Co., Inc.	270	
Jan. 1. By "Silverlarch," Far East.		
General Rubber Co.	1,942	
Jan. 2. By "Minnetonka," Far East.		
General Rubber Co.	30	
H. Muehlstein & Co., Inc.	250	
Chas. T. Wilson Co., Inc.	60	
Jan. 3. By "Garroet," Far East.		
General Rubber Co.	3,492	
Adolph Hirsch & Co., Inc.	44	
H. Muehlstein & Co., Inc.	1,615	
Chas. T. Wilson Co., Inc.	602	
Jan. 6. By "City of Lincoln," Far East.		
General Rubber Co.	3,346	
Adolph Hirsch & Co., Inc.	27	
H. Muehlstein & Co., Inc.	1,761	
Chas. T. Wilson Co., Inc.	804	
Jan. 6. By "Silverash," Far East.		
General Rubber Co.	2,220	
H. Muehlstein & Co., Inc.	950	
Chas. T. Wilson Co., Inc.	332	
Jan. 7. By "Pres. Monroe," Far East.		
General Rubber Co.	270	
Adolph Hirsch & Co., Inc.	45	
H. Muehlstein & Co., Inc.	56	
Chas. T. Wilson Co., Inc.	390	
Jan. 8. By "American Banker," London.		
Chas. T. Wilson Co., Inc.	67	
Jan. 9. By "City of Carlisle," Far East.		
General Rubber Co.	4,020	
H. Muehlstein & Co., Inc.	560	
Chas. T. Wilson Co., Inc.	112	
Jan. 10. By "Montgomery City," Far East.		
General Rubber Co.	4,798	
H. Muehlstein & Co., Inc.	166	
Chas. T. Wilson Co., Inc.	330	
Jan. 10. By "Steelmaker," London.		
Chas. T. Wilson Co., Inc.	82	

		CASES
Jan. 11. By "British Prince," Far East.		
General Rubber Co.	3,956	
Adolph Hirsch & Co., Inc.	50	
H. Muehlstein & Co., Inc.	748	
Chas. T. Wilson Co., Inc.	1,913	
Jan. 11. By "Mahsud," Far East.		
General Rubber Co.	1,031	
Chas. T. Wilson Co., Inc.	262	
Jan. 13. By "Sembilan," Far East.		
General Rubber Co.	2,920	
H. Muehlstein & Co., Inc.	263	
Chas. T. Wilson Co., Inc.	50	
Jan. 14. By "Bowes Castle," Far East.		
General Rubber Co.	1,315	
H. Muehlstein & Co., Inc.	350	
Chas. T. Wilson Co., Inc.	1,195	
Jan. 14. By "City of Perth," Far East.		
H. Muehlstein & Co., Inc.	1,601	
Jan. 14. By "Scythia," London.		
H. Muehlstein & Co., Inc.	280	

Guayule

Dec. 22. By "Mundo," Mexico.	
Continental Rubber Co. of N. Y.	560
Jan. 10. By "Panuco," Mexico.	
Continental Rubber Co. of N. Y.	560
Jan. 11. By "Oriente," Mexico.	
Continental Rubber Co. of N. Y.	560

Rubber Latex

Dec. 17. By "Silverhazel," Far East.	gals. 78,538
General Rubber Co.	
Dec. 18. By "Greystoke Castle," Far East.	gals. 34,568
General Rubber Co.	
Jan. 6. By "Silverash," Far East.	gals. 64,988
General Rubber Co.	
Jan. 10. By "Montgomery City," Far East.	gals. 65,817
General Rubber Co.	

Paras and Caucho

Dec. 26. By "Tintoretto," South America.	
General Rubber Co.	168
Jan. 13. By "Pancras," South America.	
General Rubber Co.	661

British Malaya RUBBER EXPORTS

An official cable from Singapore to the Malayan Information Agency, Malaya House, 57 Charing Cross, London, S. W. 1, England, states that the amount of rubber exported from British Malaya in December, 1929, totaled 48,513 tons as compared with 46,279 tons in November last and 66,763 tons in the corresponding period of 1928. The amount of rubber imported was 13,451 tons of which 10,176 tons were declared as wet rubber. The following are comparative statistics:

	1928		1929	
	Gross Exports Tons	Foreign Imports Tons	Gross Exports Tons	Foreign Imports Tons
January	27,731	16,618	52,546*	13,415
February	28,813	12,911	47,926	12,103
March	27,813	10,508	49,448	14,553
April	20,029	9,335	49,816	11,414
May	26,403	10,350	43,960	15,593
June	22,930	16,168	40,398	14,344
July	30,405	13,383	46,434	15,071
August	35,593	15,114	50,441	15,469
September	29,700	11,239	53,484	12,392
October	24,441	12,603	47,937†	12,516
November	68,072	10,436	46,279‡	11,204
December	66,763	11,122	48,513§	13,451
Totals	408,693	149,787	577,202	161,525

*The period January to September, 1929, inclusive, excludes latex 1,789 tons.

†Exclusive of latex 313 tons.

‡Exclusive of latex 369 tons.

§Exclusive of latex 445 tons.

The above figures represent the totals compiled from declarations received up to the last day of the month for export from and import to all parts of British Malaya and not necessarily the actual quantity shipped or landed during that month.

DISTRIBUTION

The following is a comparative return of distribution of shipments during the months of November and December, 1929:

	November, 1929		December, 1929	
	Tons		Tons	
United Kingdom	9,361		7,927	
United States	28,545		32,559	
Continent of Europe	5,007		5,196	
British Possessions	751		583	
Japan	2,544		2,121	
Other foreign countries	71		127	
Totals	46,279		48,513	

World Rubber Absorption

Consumption	Long Tons		12 Months' Running Totals, 1929				
	Calendar Years		July	August	September	October	
United States	373,000	437,000	497,889	493,238	488,073	482,036	
United Kingdom	44,800	48,504	61,071	63,739	66,799	67,289	
Net Imports							
Australia	9,516	8,430	14,583	14,600	14,850	15,209	
Belgium	6,491	7,958	8,617	9,600	9,075	9,526	
Canada	26,386	30,447	37,641	38,073	37,169	36,047	
France	34,274	36,498	52,404	53,522	53,887	54,648	
Germany	38,892	37,855	47,297	48,635	49,773	48,742	
Italy	11,290	12,433	16,413	16,446	16,392	17,183	
Japan	20,521	25,621	30,304	32,099	33,773	33,964	
Russia	12,695	15,134	8,622	*8,300	*9,000	*9,000	
Other reported	7,908	10,365	13,260	13,474	13,646	13,855	
Other estimated	8,093	*10,820	*11,000	*11,000	*11,000	*11,000	
Grand total	593,866	681,065	799,101	802,126	803,437	798,499	
Minus United States	373,000	437,000	497,889	493,238	488,073	482,036	
Total foreign	220,866	244,065	301,212	308,888	315,364	316,463	

*Provisional figure.

Compiled by Rubber Division, Department of Commerce, Washington, D. C.

World Rubber Production—Net Exports

	Long Tons—1929						
	Total 1928	July	Aug.	Sept.	Oct.	Nov.	Dec.
British Malaya	409,500	46,454	50,441	53,484	47,937	46,279	48,513
Imports	149,787	15,071	15,469	12,392	12,516	11,204	13,451
Net	259,713	31,383	34,972	41,092	35,421	35,075	35,062
Ceylon	57,267	5,746	5,564	7,961	8,411	7,195	8,683
India and Burma	10,790	974	685	384	812	1,065	930
Sarawak	10,087	1,247	993	832	1,047	668	930
B. N. Borneo	6,698	*641	*641	*640	*600	*600	*600
Siam	4,813	462	431	406	485	278	320
Iava and Madura	58,848	6,422	4,664	4,708	4,697	4,760	4,760
Sumatra E. Coast.	82,511	7,192	7,298	7,517	8,295	6,711	6,711
Other N. E. Indies	121,671	13,995	10,782	10,149	10,512	9,380	9,380
French Indo-China	9,616	555	545	755	893	771	966
Amazon Valley	21,129	1,457	1,563	1,566	1,606	1,442	1,674
Other America	1,490	148	24	79	46	...	...
Mexican Guayule	3,076	200	190	107	200	125	100
Africa	6,124	295	285	318	199	...	...
Totals	653,833	70,717	68,637	76,514	73,224	...	...

*Estimated.

Compiled by Rubber Division, Department of Commerce, Washington, D. C.

